TECHNOLOGY DEPT.

First Copy

A National Newspaper for Every Branch of the Industry

Automotive Daily News

★CARS★ SHOP EQUIPMENT TRUCKS ★★AVIATION★★ PARTS ACCESSORIES ★TIRES★

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PUBLIC LIBRARY OCT — 1930 DETROIT

SERVICE DEMAND HOLDS UP WELL

Metal Congress Session Featured by Conferences, Discussions and Papers

Members of Five Important Groups Put in Busy Second Day; Exhibition Largely Attended

CHICAGO, Sept. 23.—The members of the five important groups attending the twelfth annual Metal Congress here got down to a busy program today, the second day of the sessions. Interesting and constructive papers were presented at each of the sessions and there were conferences on sales methods and discussion of problems. Members of the various groups devoted considerable time to visiting the exhibits.

Visits throughout the week are planned to some eighteen large industrial plants in the Chicago area. While the Stevens Hotel is the scene of the Metal Congress, with its exhibitions and meetings, the American Welding Society is making its headquarters at the Congress Hotel, while the International Railroad Blacksmiths Association has its headquarters at Hotel Morrison. The four groups at the Stevens are the American Society for Steel Treating, American Institute of Mining and Metallurgical Engineers, American Society of Mechanical Engineers and Gas Products Association.

There were four interesting papers presented at the afternoon session of the American Society for Steel Treating. S. L. Blankenship, naval gun factory, Washington, discussed "Forging Practice, United States Naval Gun Factory," while W. A. Timm, Western Electric Company, Chicago, devoted his paper to "Heat Treatment Furnaces Used in Manufacture of Telephone Equipment." "Scaling of Steel at Forging Temperatures" was the paper

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DELCO-REMY OFFICIAL SAYS OUTLOOK IS GOOD

Muncie, Ind., Sept. 23.—Business outlook for the next few months is good, according to L. C. Goad, general manager of the Muncie unit of the Delco-Remy Corporation, which, he announced, will close its plants some time this week for a five-day inventory. Upon resumption of operations October 1, Mr. Goad said, battery production will be carried on at the rate of 4,000 a day.

CLEVELAND TRUST CO. SEES DEFINITE SIGNS OF BUSINESS UPTURN

Cleveland, Sept. 23.—Early September reports indicate definite evidence of more favorable business conditions, according to the Union Trust Company of Cleveland. No sudden upturn of business is expected, but the bottom apparently has been reached, and during the last quarter a gradual recovery can be expected, with continued improvement in 1931, the survey points out.

"A slight advance in commodity prices during the first part of September gives rise to the hope that the general price decline has been checked and shortly we shall see the end of those price quotations which have been below actual production costs," says the bank in its magazine, Trade Winds. "Coincident with this stiffening of prices comes the fact that a number of manufacturers, feeling that raw material prices are at the bottom, have resumed buying upon a larger scale.

"Indications of better times have yet to be reflected to any marked degree in industry. September brought a slight evidence of an upward swing in the iron and steel industry, but there has been no vigorous advance.

"The motor car industry in August fell approximately 32,000 units below July and was 41 per cent. of the five-year average for August. Projection of new models during the fall months is expected to maintain production figures at a fair level.

"Advances of agricultural products following reports of the drought have not been maintained. Prices of cotton, oats, barley, wheat, rye and hay at local farm markets in August were substantially below the August average of 1910-1914. Corn has kept a fair share of its advance.

"The safe and sane attitude of the public which sales managers are inclined to label a 'buyers' strike' is illustrated by the fact that savings deposits have been increasing steadily during the year. First of all, workers want to make sure of a cash reserve—then, as months go on, they may begin to buy again. But that point has not been reached yet."

WIDELY SEPARATED CITIES REPORT GAINS THIS MONTH

Cleveland, Denver and Tulsa Dealers Find Improvement; Portland, Ore., Business Only 5% Under 1929

NEW YORK, Sept. 23.—Service end of the automobile business among retail dealers continues to hold up well in all parts of the country, according to another survey of current conditions made by Automotive Daily News this week. Reports from Cleveland, Denver and Tulsa indicate that gains have been registered, and from Portland, Ore., comes word that the demand is only 5 per cent. below a year ago.

Business in service generally has failed to come up to last year despite earlier expectations that because of the fewer sales of new cars this year the demand for service work would be greater.

CLEVELAND, Sept. 23.—The service end of the automobile business is beginning to register imporvement in Cleveland, although all shops are not yet benefiting from the upturn. In most cases, also, business has not come up to levels of last year, although outstanding exceptions are noted. Summer business, with more automobiles on the roads than ever before as reflected by gasoline sales, proved moderately good.

"We are now getting many larger jobs, such as general overhauling of cars," reports T. J. Albaugh, service manager of the Dodge Motor Sales Service Company. "There are jobs that we should have had last spring."

Mr. Albaugh regards the outlook as seasonally good although he estimates that service sales have run close to 25 per cent. under those of 1929. Customer requirements have increased markedly during the past six weeks, he says.

The service business of the Economy Buick Company has held up

(Continued on Page 12)

G. M. TO WITHDRAW FROM PARIS SALON; CHARGE PREJUDICE

New York, Sept. 23.—General Motors has decided not to exhibit its products at the 1930 Paris Automobile Salon, October 2 to 12, because of the prolonged discrimination by the French show officials against American automotive manufacturers. The withdrawal from the show, decided upon last December but not announced until now, was explained by James D. Mooney, vice-president of General Motors Corporation and president of the General Motors Export Company, who is in Europe at present.

General Motors has been exhibiting at the Paris show for eleven years. Most other American motor manufacturers are represented. For the first few years, American products were treated the same as those of other nations outside France, which naturally was favored. For the last five years, however, the French have been enforcing a ten-year-old rule under which Americans are permitted to select space

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Sales in Medium Price Group Show Little Gain

PHILADELPHIA, Sept. 23.—Dealers handling medium-priced cars in this territory for the most part find little or no improvement in September sales of new cars over those of August. Of those reporting in response to a survey, only one stated that betterment for the month thus far had reached as high as approximately 8 per cent. over August business. The majority said trading was either no better or about the same as during August and one said the September period up to the present had been the least productive month of the year.

Nearly all the dealers interviewed, however, said that used car sales had improved during September.

In most instances dealers reported new car stocks to be in good shape at the present time, that is, satisfactorily low. Used car stocks they reported as being in a particularly satisfactory condition, with fewer on hand than at almost any time this year. A few reported cars in this division as only fairly low. None said that used cars on hand were uncomfortably large in number. In this respect some dealers are in much better shape than they were at the corresponding time of 1929.

Following are some of the reports in substance: Haines-Stenton Motor Company, Hudson and Essex dealers: "Improvement in new car sales began with us right after Labor Day. Thus far the betterment has ranged from 5 to 8 per cent. Our new car stock is in good condition, having declined 5 per cent. since August and our lower than a year ago at this time. shape, decreased 12 per cent. from the number of cars on hand in August."

Hexter Motors, Chrysler dealers: "There has been a slight improvement this month over August sales, but nothing like a spurt. Our new car stock is now about right and

(Continued on page 12)

PINES WINTERFRONT WINS FURBER PATENT DECISION

Chicago, Sept. 23.—The following statement was issued today by the Pines Winterfront Company:—

"The Furber patent, under which the Pines Winterfront Company manufactures automatic radiator shutters for automobiles, has been upheld by the United States Court at Minneapolis, which entered an order for an injunction giving the Chrysler Corporation until October 15 to discontinue sales of automobiles equipped with automatic shutters as broadly covered by the Furber patent.

"The suit was between the Detroit Motor Appliance Company and Chrysler Sales Corporation and others."

FRANKLIN REPRESENTATIVE RETURNING TO EUROPE

Syracuse, N. Y., Sept. 23.—William L. Nicholl, foreign representative of the H. H. Franklin Manufacturing Company, will return to France this week on the Bremen, sailing from New York Wednesday.

Ford and Chevrolet Share Of August Sales Is Less

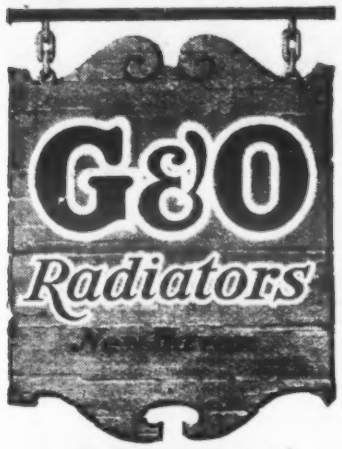
NEW YORK, Sept. 23.—New car registration statistics from twenty-four states and the District of Columbia for August reveal that in that month both Ford's and Chevrolet's percentage of the total business was substantially lower than it was in the same states in July and the other preceding months of this year.

Out of a total registration of 75,057 new cars in those states, Ford accounted for 28,485, equivalent to 37.9 per cent. of the total, while in the preceding month Ford accounted for 40 per cent. of the sales of new cars in these same states. Complete registration returns for July showed that Ford had accounted for 42.6 per cent. of all the sales of new cars in the entire country in that month. On the basis of the early returns for August, it is apparent that Ford's share was substantially reduced last month.

The total Chevrolet registrations in the twenty-four states and the District of Columbia amounted to 18,285, equivalent to 23.5 per cent. of the total retail sales in those states, as compared with 23,986, or 24.5 per cent. of the total for those states in the preceding month.

These reductions in the share of business obtained by the two largest sellers among al lthe cars indicates strongly that there was more buying in the medium-price class during August, and it is to that price division the industry is looking for signs of improvement. The medium-price group of cars has suffered the most during the depression, as a group, and the first signs of improvement in the sales of these cars will be hailed as of

(Continued on page 12)



AUTOMOTIVE
and
AIRCRAFT PRODUCTS
THE G & O MANUFACTURING CO.,
New Haven, Connecticut

METAL CONGRESS HAS BUSY DAY

(Continued from Page 1)

presented by W. E. Jominy and D. W. Murphy, University of Michigan, Ann Arbor. "Copper Brazing in Hydrogen Electric Furnaces" was the topic of H. J. Webber, General Electric Company, Schenetady.

At the session of the American Society of Mechanical Engineers, the following papers were presented:—

"Phenol Resinoid Molding Technique, Consideration of Engineering Facts Involved in the Replacement of Metals by Synthetic Plastics," Leon V. Quigley, Bakelite Company, New York; "Production of Plastic Telephone Parts," A. M. Lynn, Western Electric Company, Chicago; "Flange Type Motor Mounting," Herbert Chase, McGraw-Hill Publishing Company, New York; "Mechanical Design of Electric Motors as Regards Standardization and Interchangeability," J. L. Browne, Westinghouse Electric and Manufacturing Company, East Pittsburgh.

The American Society of Mining Engineers heard the following papers: "Studies Upon the Widmanstatten. I. Introduction. The Aluminum-Silver System and the Copper-Silicon System," by Robert F. Mehl and Charles S. Barrett; "Cemented Tungsten Carbide," by L. L. Wyman and F. C. Kelley; "Transformation of Austenite at Constant Subcritical Temperatures," by E. S. Davenport and E. C. Bain.

Papers presented at the session of the American Welding Society today were: "The Examination of Welds by the X-Ray Diffraction Method," by J. T. Norton, Massachusetts Institute of Technology; "Fatigue Investigations of Welded Joints," by G. E. Thornton, State College of Washington; "Stress Distribution in Sidewelded Joints," by Walter H. Weiskopf and Milton Male.

Men in Attendance at The Metal Congress

Acetylene Journal Publishing Company, Chicago. Booth 72. M. S. Hendricks, editor.

Air Reduction Sales Company, N. Y. Booth 95.

Ajax Electrothermic Corporation, Trenton. Booth 5-D. G. H. Clamer, president; E. F. Northrup, vice-president and technical adviser; Dudley Willcox, treasurer and assistant general manager; R. N. Blakeslee, secretary and sales manager; A. D. Meyer, sales metallurgist; G. F. Applegate, shop foreman.

Allegheny Steel Company, Brackenridge, Pa. Booth 9-D.

Allen Steel Company, Inc., Edgar, New York. Booth 5-B. Henry Sears Hoyt, president of Edgar Allen Steel Company; V. A. Greene, vice-president and general manager, Edgar Allen Steel Company; E. R. Carnell, director, Edgar Allen Steel Company; H. R. Adams, manager Chicago branch; R. M. Brushingham, Detroit district manager.

Aluminum Company of America, Pittsburgh. Booth 5-L.

American Brass Company, Waterbury. Booth 92. W. H. Dowd, exhibit manager; A. M. Dinkler, assistant manager, Ansonia branch; W. C. Swift, service engineer; A. L. O'Brien, service engineer; C. D. Pillsbury, agent; I. C. Ralph, service engineer; J. P. Hocking, F. W. Hackett, F. E. Hill, H. G. Wallis.

American Car and Foundry Company, New York. Booth 51. F. C. Cheston, A. G. Wood, Harold Cheston.

American Cyanamid Company, New York. Booth 19-B. G. N. Omohundro, industrial chemicals division; H. H. Suddard, Chicago representative; G. B. Horsfull, Detroit representative; H. M. Sunderland, Cleveland representative; George D. Johnson, metallurgist; P. E. Holder, field metallurgist; E. L. Knapp, field metallurgist.

American Forge Company, Chicago. Booth 7-F. W. E. Crocombe, president; F. Gauch, vice-president; F. L. Moore, production manager; A. Nettenstrom, assistant plant superintendent; H. Mulford, sales manager; S. E. Burns, sales department; L. W. Eighmy, sales department.

American Gas Association, New York. Booths 50, 52 and 62.

American Gas Furnace Company, Elizabeth, N. J. Gas section.

American Machinist, New York. Booth 15-F. W. E. Kennedy, manager; L. E. LeGrand, assistant editor; K. H. Condit, editor and publishing director; W. E. Irish; Ray Deen; Miss Anne LiSota; W. H. Shipman; O. Laughlin; and H. C. Stephenson.

American Steel and Wire Company, Chicago. Booth 71. F. Connell, W. E. Mackley and G. S. Rose of New York; E. S. Humphrys, C. J. McGregor, H. B. Maguire, A. E. Ward, P. M. Jones, W. L. Blazier, R. C. Fisher, L. S. Young, W. H. Cordes, E. E. Louis, and R. Francisco of Chicago.

Anchor Drawn Steel Company, Latrobe, Pa. Booth 24-B.

Andresen and Associates, Inc., F. C., Pittsburgh. Booth 43-B.

Armstrong-Blum Manufacturing Company, Chicago. Booth 29. Harry J. Blum, secretary; Stanley A. Woleben, assistant secretary; and Gustav M. Hess, salesman.

Armstrong Brothers Tool Company, Chicago. Booth 27. Horace Armstrong, W. T. Armstrong, George Nufer.

Armstrong Cork and Insulation Company, Lancaster, Pa. Booth 6-L. Paul Taichinger, manager, Chicago office; S. M. Jenkins, special sales representative; L. W. Bertelsen, representative, Pittsburgh office.

Associated Alloy Steel Company, Cleveland. Booth 3-D. D. B. Carson, vice-president, in charge of sales; H. A. DeFries, chief metallurgical engineer; C. B. Boyne, assistant sales manager; K. G. Reynolds, architectural representative; W. L. Wiewel, sales manager—tube division; P. E. Floyd, district sales manager—Chicago; W. Kinsey, district sales manager—Cincinnati; A. N. Vogt, district sales manager—Cleveland; J. E. Polhemus, district sales manager—Detroit; R. P. McCarty, district sales manager—New Haven; P. L. Coddington, district sales manager—New York; G. F. Wilson, district sales manager—Philadelphia; W. L. Weaver, district sales manager—Albany.

Automatic Temperature Control Company, Inc., Philadelphia. Booth 27-D.

Automotive Industries, Phila. Booth 9-L.

Babcock and Wilcox Company; Babcock and Wilcox Tube Company, New York. Booth 32-B. W. W. Eaton, J. Brett, A. G. Reilly, A. R. McAllister, J. C. Hodge, S. J. Crooker, W. E. Sparrow, Jr., R. L. Ripley, H. D. Newell, N. Hamilton, Magnus Christensen, W. M. Glen.

Bastian-Blessing Company, Chicago. Booth 96.

Bausch & Lomb Optical Company, Rochester. Booth 34-B. I. L. Nixon, H. L. Shippy, W. Patterson, M. Stevens

Bell & Gossett Company, Chicago. Booth 46-B.

Bethlehem Steel Company, Bethlehem, Pa. Booth 30-B. G. F. Hocker, manager of sales, forgings and castings; R. S. Tucker, manager of sales, alloy steels; D. C. Roscoe, manager of sales, tool steels; T. J. Fitzgibbons, sales agent, drop forgings; F. H. Baldwin, sales department; J. E. McKinney, metallurgical engineer; W. R. Shimer, metallurgical engineer; T. G. Foulkes, research metallurgist; J. P. Witteman, metallurgist; A. P. Spooner, engineer of tests; J. H. Stoll, assistant engineer of tests; H. R. Wceman, H. W. Hibshman, W. E. Titus, H. E. Graffin, G. Cushman, J. W. Codding, F. E. Fisher, R. MacDonald, J. F. Gaffney.

Botfield Refractories Company, Philadelphia. Booth 45. Axel H. Engstrom, sales manager; W. B. Smith, Mid-Western field representative.

Bristol Company, Waterbury. Booth 27-B. H. L. Griggs, general sales manager; H. W. Moss, Detroit district manager; L. G. Bean, Chicago district manager; R. M. Walker, Pittsburgh district manager.

Brown Instrument Company, Philadelphia. Booth 21-B.

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SPARKS from DETROIT

R. P. Rice

* * *

Capt. H. Ledyard Towle

* * *

Good-by Dobbin

Chris Sinsabaugh—Detroit Editor

R. P. RICE taught me to drive an automobile, my first car, a model N Ford of 1907 vintage. Then he was assistant to Thomas J. Hay, manager of the Ford branch in Chicago. At the time Ford also had a six-cylinder model, but of course that was far beyond the reach of a common everyday newspaper man. Rice was sent to Seattle and given the Ford branch there to handle. He made a fine job of it, but the call of the East sent him to Kansas City, still a Ford man. A few years back, though, he cut loose and took on another make.

Now Rice writes that he has returned to the Ford and although the old shingle has been out only a short time at 1414 Baltimore St., Kansas City, business is brisk.

* * *

IN the days when Horseless Age was one of the leading trade papers (it is acknowledged to be the pioneer and was founded by Brother Ingersoll) one whose name often was seen over articles pertaining to the technical points of automobile construction of those days was none other than Captain H. Ledyard Towle, now head of the color studios of the Fisher Body Company. Captain Towle was in our midst last week and talked to the Adcraft Club, telling its members how paint helps sell mechandise.

Another veteran came along this week—Charles W. Mears, dean of the Cleveland School of Advertising and Sales, who participated in the doings of the Detroit Retail Institute, sponsored by the Detroit News, which organized the institute "to discuss the problems which confront those who are interested in the business of retailing." Mears talked on "Why Not Make More Profit?" and "What Is the Biggest Power in Retailing."

Mears has a distinct automobile background, first, as editor of Cycling Gazette, of Cleveland, published by Emil Grossman and which carried an automobile section as far back as 1898, and later as advertising manager of the Winton Motor Car Company. In the bicycle era Mears was chief consul of the Ohio division of the League of American Wheelmen and also state handicapper of racing, just as was John Wetmore in New York and New Jersey and Jack Kerrison of Boston in New England. And Wetmore and Kerrison both have grown up with the automobile industry.

* * *

IN the merger of the DiVco-Detroit Corporation of Detroit and the Step-N-Drive Corporation of Buffalo, through the purchase of the latter, President John Nicol of the DiVco company sees old Dobbin shoved further into the background as the motive power in house-to-house deliveries. DiVco now has its gas propelled, specially designed vehicles in the service of more than 240 dairies, bakeries and laundries throughout the United States and Canada.

"Motorization of milk routes with specially designed equipment has shown astounding savings," says Mr. Nicol. "On the basis of a time saving of one-third, DiVco has eliminated one-third of the routes in many dairies, effecting an immediate labor saving of thousands of dollars annually. Two DiVcos are handling three horse-drawn routes in these instances, each DiVco delivering one and one-half of the original horse-drawn routes."

* * *

WINDSOR, our neighbor across the river, has just passed an ordinance which compels motorists to equip their cars with windshield wipers. Absence of wipers that can be operated from the seat means a fine of from $5 to $10 under the new traffic act.

Making sales history . . . . .

Hā Dees Controlled Hot Water Heat

EASY TO MOUNT
Ha Dees ideal design permits easy "two pipe" method of mounting; just two holes to bore to insure rigidity.

COMPLETE HEAT CONTROL
Ha Dees Heaters permit complete control of aero-dynamic fan-forced, heated air both in volume and direction.
A National Surety Company gold bond guarantee of quality with every heater.

The Ha Dees Heater steps out ahead of competition again in 1930 with new engineering achievements. New efficiency, due to the patented aero-dynamic fan design, makes the Ha Dees Heater a marvel for quietness and increased heating efficiency—and for record-breaking sales. Investigate!

Hā Dees HOT WATER Car Heater

LIBERTY FOUNDRIES COMPANY (A division of Bund Piston Ring Company)
ROCKFORD - - - - - - ILLINOIS

Something to Crow About!

. . . we are proud to have met the requirements of the American Austin.

HEXCEL RADIATOR CO.
Milwaukee

YORK BODY SIGNS LEASE ON KOKOMO, IND., PLANT

Kokomo, Ind., Sept. 23.—An assembly plant for truck bodies will be established here by the York Commercial Body Corporation of Philadelphia, it has been announced in connection with the signing of a five-year lease on a building in which the plant will be located. It is said the York company manufactures about 60 per cent. of all commercial bodies used in this country. Production, it is planned, will get under way at the new plant about the first of next month, employing sixty workmen in its operations.

ONTARIO PLANS HIGHWAY WORK FOR UNEMPLOYED

Montreal, Sept. 23.—A million dollars' worth of new highway work to be undertaken this fall, with the idea of relieving unemployment, was announced to day by Hon. George S. Henry, minister of highways for Ontario.

New Ford Car Sales Gain In 7 Months in 15 States

NEW YORK, Sept. 23. — Retail sales of new Ford passenger cars in the first seven months of this year exceeded the corresponding period of last year in fifteen states and the District of Columbia, according to the official registration statistics for the period.

The outstanding increase was scored in New York state, where the registrations of new Fords in the seven months of this year amounted to 69,940, as compared with 50,667 in the similar 1929 period, an increase of 37.8 per cent. The neighboring state of New Jersey also was partial to the Ford in the first seven months, registering 26,176, as compared with 19,802 in the 1929 period, an increase of 32.2 per cent.

In line with the tendency of Ford sales to show the greater increases in thickly populated states, Massachusetts reported the next best increase over 1929. Registrations in that state in the seven months totaled 31,499, as compared with 26,658 in the corresponding period of last year, an increase of 18.2 per cent.

Pennsylvania had the next best gain, with 53,312 registrations, as against 48,524 a year ago, an increase of 9.9 per cent.

Other substantial gains were those of California, where registrations amounted to 52,653, as against 49,530 last year, a gain of 6.3 per cent. Illinois Ford sales jumped from 47,016 in the first seven months of 1929 to 50,228, an increase of 6.8 per cent.

In Missouri, Ford retail sales in the seven months' period of this year amounted to 26,220, as against 24,850 a year ago, a gain of 5.5 per cent.

Other states in which Ford sales set up a gain this year over last in the seven months were Connecticut, Delaware, Florida, Maryland, New Hampshire, Rhode Island, Vermont, Virginia and the District of Columbia.

States in which the Ford registrations in the seven months practically equaled those of a year ago were Washington, with registrations of 11,483, as compared with 11,346, and West Virginia, where registrations of 8,129 compared with 8,175.

Detail sales of Ford cars in the entire country in the seven months' period amounted to 793,898, as compared with 835,617 in the corresponding period of last year, a decline of 5 per cent. This compared with a loss for the industry as a whole of 26 per cent. Ford's sharpest loss from last year came in July, this decline causing sales for the entire period to fall below the istrations in the first six months corresponding period of 1929. Regwere slightly higher than those of the preceding year.

Following are the comparative sales of Ford cars in the states in which registrations in the first seven months of the current year exceeded those of the corresponding period of last year:

	1930	1929
California	52,652	49,530
Connecticut	9,496	8,534
Delaware	2,276	2,126
Florida	10,290	9,801
Illinois	50,228	47,016
Maryland	10,263	9,577
Massachusetts	31,499	26,658
Missouri	26,220	24,850
New Hampshire	2,994	2,543
New Jersey	26,176	19,802
New York	69,940	50,667
Pennsylvania	53,312	48,524
Rhode Island	3,940	3,409
Vermont	2,234	1,774
Virginia	14,332	14,265
Dist. of Columbia	6,112	5,178

FORD DEALER HOLDS GRAND OPENING AT JACKSON, MISS.

Jackson, Miss., Sept. 23 (UTPS).—Formal opening of the new Graves-Ramsey Motor Company, Ford dealer here, was held recently. The company is located at 414-16 South State St., and is headed by B. B. Graves and J. E. Ramsey.

Men in Attendance at The Metal Congress

(Continued from Page 2)

Calorizing Company, Wilkinsburg, Pa. Booth 12-Ba.

Campbell, Inc., Andrew C., Bridgeport, Conn. Booth 25.

Carboloy Company, Inc., Detroit. Booth 10. W. W. Fullagar, Chicago district manager; P. O. Deeds, N. N. Shepherd, G. M. Moote, E. V. Johnson, F. R. Johnson, P. J. Connor, W. S. Baker; E. C. Howell, advertising manager; V. L. Allen, assistant advertising manager.

Carborundum Company, Niagara Falls. Booth 53.

Carborundum Company, Perth Amboy, N. J. Booth 53. R. A. Beverley, S. A. Fenno, district sales managers; J. A. King, R. S. Baker, R. J. Penny, W. C. Thiess, sales engineers.

Carpenter Steel Company, Reading, Pa. Booth 6-B. F. A. Bigelow, president; J. H. Parker, vice-president; R. V. Mann, assistant to president; F. R. Palmer, assistant to president; B. H. DeLong, metallurgist; G. V. Luerssen, metallurgical department; P. B. Greenawald, metallurgical department; O. V. Greene, metallurgical department; G. H. Edmonds, sales department; W. M. Loos, sales department; R. L. Williams, Detroit district sales manager; H. J. Joyce, Indianapolis district sales manager; J. B. Guthrie, Chicago district sales manager; K. L. Crickman, St. Louis district sales manager; E. Von Hambach, L. E. Cooney, R. I. Beeson, C. W. Windfelder, E. E. Mueller, J. L. Hall and Leroy Owen, sales representatives.

Case Hardening Service Company, Cleveland. Booth 46-B. W. C. Bell, president; E. J. Gossett, vice-president; J. S. Ayling, sales manager; C. P. Critzer, sales engineer.

Chemical Catalog Company, Inc., New York. Booth 8-B. H. W. Gillett, editorial director; Richard Rimbach, associate editor; Francis M. Turner, Jr., president; H. B. Lowe, vice-president; Wm. P. Winsor, district manager, Cleveland; G. E. Cochran, district manager, Chicago.

Chicago Steel Foundry Company, Chicago. Booth 41. David Evans, president; B. G. Tarkington, engineer; C. McA. Evans, assistant to president; J. A. Marr, works manager; Joe Frank, assistant superintendent; G. MacMillan, metallurgist; A. I. Gilbert, purchasing agent.

Chicago Steel and Wire Company, Chicago. Booth 106.

Climax Molybdenum Company, New York. Booth 23-D. H. L. Brown, acting general manager; J. B. Thorpe, assistant to president; A. Kissock, vice-president, in charge of production; W. P. Woodside, district manager, Detroit; George O. Loeffler, district manager, Pittsburgh; E. R. Young, metallurgical engineer, Detroit; J. Kent Smith, consulting metallurgical engineer.

Colonial Steel Company, Pittsburgh. Booth 24-B.

Columbia Tool Steel Company, Chicago Heights, Ill. Booth 23-B. A. T. Clarage, president; R. M. Sandberg, general manager; C. B. Shoenberger, general superintendent; W. J. Mathews, superintendent of melting department; A. J. Scheid, Jr., metallurgist; T. G. Dougall, Chicago district sales manager; A. J. Scheid, Milwaukee district sales manager; A. W. Mierow; C. F. Scheid, W. M. Hopkins, T. L. Haines, L. Elsman, S. F. Evans.

Corhart Refractories Company, Inc., Louisville, Ky. Booth 6-F. Fred W. Schroeder, metallurgical engineer; H. W. Baque, sales engineer; Fred S. Thompson, sales manager.

Crucible Steel Company of America. Booth 28-B.

Dardelet Threadlock Corporation, New York. Booth 19-D. Lucien C. Sprague, executive vice-president; Norman C. McLoud, executive representative; William L. McKay, sales

(Continued on Page 4)

FORD AND CHEVROLET DEALERS IN NEW YORK AND PA. OPTIMISTIC

Jamestown, N. Y., Sept. 23.—A survey of new car sales in southwestern New York and northwestern Pennsylvania this month, indicates a feeling of profound optimism on the part of distributors and dealerships, especially such organizations as are engaged in the sale of Ford and Chevrolet cars and trucks.

Alfred J. Horan, vice-president in charge of sales, the Eagle Garage Company, Inc., Ford distributor, Jamestown, says that an increase in dispositions of both new and used passenger cars and trucks has been recorded by the firm since the first of the month. Inquiries at hand and orders being placed for future delivery indicate a satisfactory volume of business for the last three months of the year.

The Parket Motor Sales Company, Washington Street, Chevrolet distributor, reports that by adhering strictly to a fair trade-in policy, and establishment of used car lots in strategic centers of the community, it has been able to keep stocks of used cars at a minimum and also secure sales of new cars and trucks that would probably otherwise be obtained by other firms.

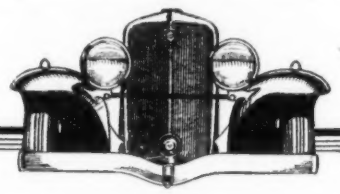
Leworthy Brothers, Inc., Dunkirk, Ford dealer, has recorded increased sales for the month in the Dunkirk-Fredonia section. Prospective customers have gained about 10 per cent. in the past six weeks. Rural community sales are better.

FOX-VAIL MOTOR COMPANY TO HANDLE FORD LINE

New Brunswick, N. J., Sept. 23.—A certificate of incorporation has been filed at the office of the county clerk for the Fox-Vail Motor Company, 413 Raritan Ave., Highland Park, the firm having recently announced the opening of business on October 1 as a Ford dealership. The incorporators are John C. Fox, Grace W. Fox, Thomas C. Vail, and Flora A. Vail. All are from Plainfield.

CAPITAL CITY CHEVROLET OPENS USED CAR BRANCH

Jackson, Miss., Sept. 23 (UTPS).—The Capital City Chevrolet Company has opened a branch used car department on Pearl Street, according to W. C. Reed, manager.



STUDEBAKER sales are *free wheeling forward*—

PRESIDENT, COMMANDER, and a new low-priced DICTATOR

build profits for dealers!

Free Wheeling in President and Commander Eights moved Studebaker to *fifth* position (late August figures) in national registrations.

But a new Dictator Eight at lower prices —*plus* Free Wheeling—is making even more sensational gains!

By unleashing momentum with Free Wheeling, Studebaker has unleashed a sales impetus that produces even greater profits for dealers. Free Wheeling is available in three great *seasoned* eights in three great price classes.

The franchise of "America's Friendliest Factory" is today the greatest potential money-maker in the industry.

We invite you to discuss with us, in confidence, the valuable Studebaker franchise in your territory. Write today.

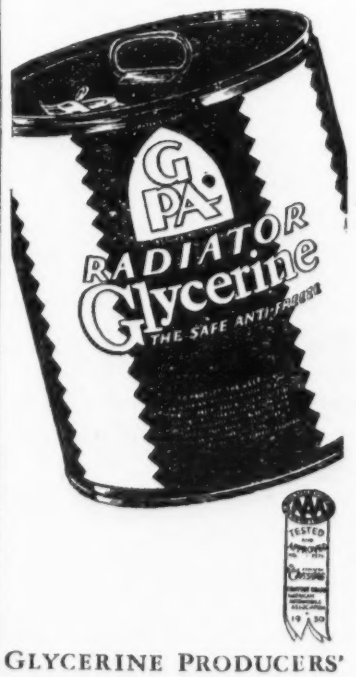
PAUL G. HOFFMAN
Vice President

THE STUDEBAKER CORPORATION OF AMERICA
South Bend, Indiana

2 profits

A profit on sales
A profit on service

WHY pick crabapples when there are melons to be had? G.P.A. gives you a substantial profit on the sale . . . it gives you a profit on the initial servicing . . . and a chance to sell other services as well. 1,600,000 motorists used glycerine anti-freeze last year, more than ever before. They'll be back again this year . . . bringing their friends with them. Write for the G.P.A. dealer service manual. It costs us money but it's free to you.



GLYCERINE PRODUCERS' ASSOCIATION
45 EAST 17th STREET, NEW YORK CITY

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ARMOUR AND COMPANY
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JOHN T. STANLEY CO., INC.
SWIFT & COMPANY
ALLEN B. WRISLEY CO.

Automotive Daily News

"Of, By and For the Entire Automotive Industry"

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AUTOMOTIVE DAILY NEWS PUBLISHING CORPORATION,
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WEDNESDAY, SEPTEMBER 24, 1930

ADVERTISING AND BUSINESS HEADQUARTERS

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George M. Slocum, Manager Detroit Bureau, 427-8 Fisher Building, Detroit, Mich., phone Empire 3500: Willard R. Cotton, Western Manager, 333 North Michigan Ave., Chicago, Ill., phone Central 5936; Metz B. Hayes, New England Manager, Little Building, Boston, Mass.; Blanchard, Nichols & Coleman, American National Bank Building, San Francisco, Cal.: Lincoln Building, Los Angeles, Cal.; 1037 Henry Building, Seattle, Wash Address ALL advertising and business correspondence to 2716 Graybar Building, New York City.

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1926 Broadway, New York, N. Y. Telephone TRA falgar 4500
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To Foreign Countries—One year, $15.00: two years, $26.00. Single copies, 10 cents.

Crystalline Rubber

ANNOUNCEMENT by Dr. George Burgess, director of the Bureau of Standards in Washington that crystalline rubber had been produced by his department under direction of Dr. E. W. Washburn, chief of the division of chemistry.

To the layman perhaps, this announcement does not mean very much, but to the industrialist, whose product employs rubber in any of its varying forms, the news is of prime importance. As Dr. Burgess expresses it, "rubber has been an amorphous, nondescript substance on the borderline between solid and liquid." The word "rubber" has been used to describe a wide variety of products, ranging from the eraser used to eliminate pencil marks to the hard, almost metal-like substance of which fountain pen cases and similar articles are made. With the practical application of rubber crystals a much more specific substance might emerge.

It is not beyond the bounds of possibility that the chemists, working with rubber crystals, may produce a new substance having some of the properties of a metal and retaining some of the traditional characteristics of rubber. At the moment we can only dimly glimpse the possibilities that this announcement foreshadows. Any industrial exper can imag ine the opening of new commercial fields that would come with the practical perfection of some substance having the characteristics indicated.

We have often commented on the debt that industry owes to its chemists and this discovery by a government department, has commercial possibilities that actually are astonishing, even in an age used to surprises.

A Dangerous Measure

SOUTH DAKOTA is faced by a piece of legislation which is extremely dangerous to that state and which would be equally so everywhere else if the idea behind it ever gained general acceptance. This proposed law would impose a tax of 3 per cent. on the price of every car sold in South Dakota. The law was passed by the Legislature, but the automotive interests of the state swung into action and were able to force its submission to a referendum of the people of the commonwealth. The vote will be taken at the November election.

This form of tax is discriminatory in the extreme. It imposes a burden on a single class, because, presumably, that class is considered as being particularly prosperous.

At the time when the Federal Congress removed the final fragment of the excise tax on motor vehicles, one state Legislature promptly added the same amount in the form of a state sales tax. This measure was finally defeated, we believe, but the good intentions of the Legislature were patent to all.

If this idea of state sales taxes ever gains headway, with added imposts of 2 or 3 per cent. on the selling prices of all motor vehicles, it will be an extremely dangerous situation. With the growing fuel taxes, we would very quickly reach a place where these added burdens would become a serious sales obstacle for automotive dealers in all sections of the country.

The South Dakota trade associations deserve the good wishes of the whole industry in their fight to eliminate this dangerous burden on the automotive business in their state.

Just a trifle more than 100 days and the New York automobile show will be in full swing. There never has been a time when it was more important to make this national event an outstanding success than it is now. All American business will be watching the automobile shows this year as an indication of what to expect.

Men in Attendance at The Metal Congress

(Continued from Page 3)

promotion engineer; F. D. Moore, sales promotion engineer; Edward J. McManus, laboratory foreman.

Darwin and Milner, Inc., Cleveland. Booth 17-B. Victor Tlach, president; John C. Koch, secretary; H. L. Harrison and Charles F. Lear, representatives.

Dearborn Chemical Company, Chicago. Booth 6-D. E. M. Converse, Chicago; assisted by C. C. Rausch, Chicago; C. I. Loudenback, Detroit; J. A. Craenner, Pittsburgh.

Driver-Harris Company, Harrison, N. J. Booth 20-B. F. L. Driver, Jr., president; F. V. Lindsey, vice-president and sales manager; J. M. Lohr, metallurgist; J. C. Bilek, Chicago sales manager; Mr. Thornquist; J. B. Shelby; G. M. Pinney; W. E. Blythe, Detroit sales manager; L. Prior; C. Pettit; Messrs. Hobbje and Eckley.

Duriron Company, Dayton, Ohio. Booth 43. M. W. Smith, G. A. Baker, N. E. Philpot, E. R. Suter, R. C. Schenk.

Eclipse Fuel Engineering Company, Rockford, Ill. Booth, Gas Section. G. W. McKee, O. M. Olsen, K. A. Scharbau, D. A. Campbell, L. J. Strohmeyer, E. A. Stoner, C. H. Martin, O. N. Sellers, C. J. Michelet, P. L. Reymond.

Elkon, Inc., New York city. Booth 98.

Electric Furnace Company, Salem, O. Booth 4-L. F. T. Cope, general manager and chief engineer; R. F. Benzinger, vice-president; S. F. Keener, sales manager; N. H. Knowlton, assistant sales manager; M. H. Mawhinney, fuel furnace engineer; A. H. Vaughan, assistant chief engineer; G. P. Lozier, superintendent; S. J. Eberwein, assistant superintendent; R. C. Oyster, chief designer; A. F. Kingsley, chief draftsman; A. E. Wright, advertising manager; C. L. West, K. U. Wirtz, W. S. Bowling, sales engineers; T. B. Bechtel, Chicago district representative; F. J. Peterson, B. C. Thompson, R. D. Thomas, Detroit district representatives; W. M. Smith, eastern sales representative.

Electric Steel Founders' Research Group, Chicago. Booth 39-B.

Ferner Company, R. Y., Washington, D. C. Booth 14. R. Y. Ferner, United States and Canadian representative; Charles T. Ameel, S. E. Kenworthy, W. E. Bailey, demonstrators; Lambert G. Neff, A. W. Bissell, Chicago representatives; Walter S. Ryan, Detroit representative.

Ferry Cap and Set Screw Company, Cleveland. Booth 2-L. H. D. North, vice-president and sales manager; Herbert A. Keith, H. B. Pulsifer, metallurgist, Cleveland; A. L. Whittemore, W. J. Graham, Chicago; W. M. Leach, Detroit.

Finkl & Sons Company, A, Chicago. Booth 2-D. C. E. Finkl, general manager; Fred Finkl, works manager; Wm. Finkl, M. R. Chase, metallurgical engineer; E. H. Graham, Detroit district representative; T. P. Wallace, Cincinnati district representative; W. H. Rieger, Pittsburgh district representative; J. M. Curley, New England district representative; H. Berg, New England district representative.

Firth-Sterling Steel Company, McKeesport, Pa. Booth 37-D. L. G. Firth, general manager; D. G. Clark, director of sales; G. J. Comstock, director of research; O. K. Parmiter, metallurgical engineer; R. S. Stevick, works manager; A. S. Martin, manager, engineering department; M. F. Judkins, Firthite department; Frank Marth, assistant works manager; C. G. Thoma, advertising manager; O. T. Smith, Boston district manager; H. I. Moore, Hartford district manager; A. E. Barker, New York district manager; W. C. Royce, Cleveland district manager; G. A. Jacobs, Detroit district manager; E. T. Jackman, Chicago district manager; W. J. MacFarland and J. V. Little, Philadelphia office. Salesmen: Al Mattson, Ira A. Rabitoy, G. R. Bunting, A. M. David, E. W. Nelson, J. H. Johnson, R. F. Kimber, M. J. O'Brien, W. A. Ruppel, R. J. Varney, T. H. Garlick, Harry Jarvis, Fred Jarvis, D. E. Jackman, Jr., W. A. Nungester, C. O. Ericke, T. A. Larecy, E. D. Roberts, H. E. Lennon, George J. Bauer, F. G. Davis, G. A. Jacobs, R. K. Koon, Albert R. Baker, Charles E. Hughes, Alan Jackman, William Loach, F. N. Mead, I. Olsen, L. S. Russell, Joseph Smith, Geo. Sutcliffe, John Van Duyne, E. T. Broaddus.

Ford Company, J. B., Wyandotte, Mich. Booth 26. B. N. Goodell, W. M. Cole, C. S. Tompkins, C. R. Beaubien, H. W. Faint, all of the industrial department.

Fusion Welding Corporation, Chicago. Booth 106. J. B. Green, president; L. F. Collins, sales manager; Dana Summers, general superintendent; R. W. Holt, research engineer; F. A. Green, eastern district manager; M. P. Hare, southwest district manager; R. O. Waldman, western district manager; A. Bernard, sales engineer; R. F. Beazell, sales promotion.

Gathmann Engineering Company, Baltimore. Booth 33-B.

Gehnrich Oven Company, Inc., Long Island City, N. Y. Booth, Gas Section. C. L. Gehnrich, president; A. V. Maday, vice-president; H. P. Rasmussen, manager Chicago district; H. Gehnrich, New York office, and P. Kriegel, advertising manager.

General Alloys Company, Boston. Booth 22. H. Harris, president; W. K. Leach, general manager; G. C. McCormick, chief engineer; F. J. Blaney, general superintendent; W. R. Blair, E. E. Armory, engineering department; H. G. Chase, manager furnace parts division; R. M. Kirk, manager New York branch; Ralph Hare, New England representative; A. L. Grinnell, manager Detroit branch; E. R. Dougherty, manager Chicago branch; R. W. Herrick, Chicago branch; J. J. Donovan, Chicago branch; C. P. Mills, director chrome alloy department; J. C. Van

(Continued on page 5)

COMING EVENTS

SEPTEMBER

22-26—**Chicago, Ill.** American Society of Mechanical Engineers Iron and Steel Division meeting.
22-26—**Chicago, Ill.** American Welding Society meeting.
22-26—**Niagara Falls, Ont.** American Gear Manufacturers Association semi-annual meeting.
22-26—**Chicago, Ill.** Society for Steel Treating meeting.
22-26—**Chicago, Ill.** American Society for Steel Treating meeting at Stevens Hotel.
29-Oct. 4—**Pittsburgh, Pa.** National Safety Council Annual Safety Congress.

OCTOBER

2-12—**Paris, France.** Automobile Salon.
6- 7—**Reading, Pa.** Pennsylvania Automotive Association Convention.
6- 8—**Tulsa, Okla.** American Society of Mechanical Engineers Petroleum meeting.
6-11—**Washington, D. C.** Sixth International Road Congress.
6-11—**Washington, D. C.** American Roadbuilders' Association Convention.
7- 8—**Detroit, Mich.** Society of Automotive Engineers production meeting at Book-Cadillac Hotel.
13-15—**French Lick Springs, Ind.** American Society of Mechanical Engineers general meeting.
14-15—**Syracuse, N. Y.** New York State Dealers' Association Convention.
16-25—**London, England.** Olympia Motor Show.
22-24—**Pittsburgh, Pa.** Society of Automotive Engineers transportation meeting.

NOVEMBER

4- 7—**Chicago, Ill.** National Tire Dealers' Association Convention.
6-16—**Berlin, Germany.** International Automobile Show.
8-15—**Chicago, Ill.** Automobile Salon at Drake Hotel.
13-19—**Cleveland, O.** Motor and Equipment Association and National Standard Parts Association, Joint Show.
13-23—**Paris, France.** Commercial Vehicle Salon.

JANUARY

3-10—**New York.** National Automobile Show.
17-24—**Detroit, Mich.** Annual Show, Convention Hall.
24-31—**Chicago, Ill.** National Automobile Show.

FEBRUARY

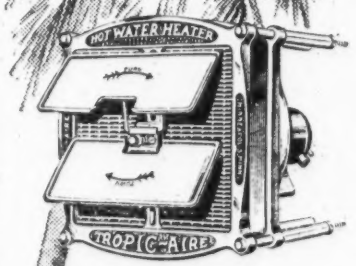
7-14—**Los Angeles, Cal.** Automobile Salon.
21-28—**San Francisco, Cal.** Automobile Salon.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

TROPIC-AIRE

Reg. U. S. Pat. Off.

The Original Fan-Equipped Hot Water Automobile Heater



With water shut off, Tropic-Aire becomes a ventilator in summer.

Still another Tropic-Aire advantage. There are plenty of others. All good sales points.

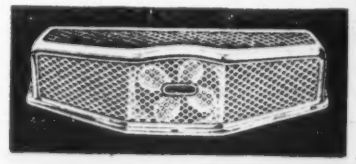
Why not be one of the thousands of Tropic-Aire dealers to cash in this year of 1930? Write for facts.

Standard Model Tropic-Aire

Built for installation under instrument board—in three sizes—the Senior for large cars, the Junior for medium sized cars, the Ford for Ford Model "A" cars.

TROPIC-AIRE, Inc.
110 Eleventh Ave., N. E.
Minneapolis, Minnesota

In Canada:
14 Breadalbane Street, Toronto
52 Adelaide Street, Winnipeg
Pat. Nos. 1581761, 1668491, RE17131. Others pending.



The New Rear Compartment Heater

Installed back of front seat or in front of rear seat—a perfect heating plant for Town Car, Limousine, Taxicabs, the larger Coaches or Sedans. Independent or operates in unison with front heater.

Men in Attendance at The Metal Congress

(Continued from Page 4)

Arman; Braun, a dog; Jerry, another dog; three airplanes.

General Electric Company, Schenectady. Booth 80.

General Electric X-Ray Corporation, Chicago. Booth 15-B. E. W. Page, W. C. Dee, S. Nielson, E. E. O'Donnell and W. B. Andrews.

General Spring Bumper Corporation (Division of Houdaille-Hershey Corp.), Detroit. Booth 4-F. C. F. U. Kelly, vice-president Houdaille-Hershey Corporation; B. M. Short, vice-president General Spring Bumper Corporation; F. A. Cornell, vice-president Houde Engineering Corporation; J. B. O'Neill, special representative Houdaille-Hershey Corporation; C.-G. Griffiths, special representative General Spring Bumper Corporation; R. R. Tompkins, special representative Houde Engineering Corporation.

Globar Corp. Niagara Falls. Booth 53.

Gordon Company, Claud S., Chicago. Booth 34-D. Claud S. Gordon, president; A. W. Anderson, superintendent; Richard Schoenfeld, sales manager; S. A. Silbermann, Indiana district representative.

Gray Iron Institute, Inc., Cleveland. Booth 45-B. Arthur J. Tuscany, manager; Chas. E. Mitchell, associate manager.

Great Lakes Forge Company, Chicago. Booth 20-D. G. C. Hodgson, president; W. C. West, vice-president; C. A. Lamb, general manager; A. M. Stever, metallurgical engineer; R. J. Geisler, sales department.

Hagan Company, George J., Pittsburgh. Booth 47. R. E. Talley, president; C. F. Cone, engineer; V. A. Hain, district manager; J. Sandberg, district manager; A. D. Dauch, engineer.

Helcomb Steel Company, Syracuse. Booth 28-B. R. H. Dougherty, assistant to president; H. A. Pardee, general manager; J. T. Leyden, service metallurgist; H. J. Stagg, assistant manager; H. L. Day, metallurgist; J. H. Hinkley, Chicago branch manager; J. F. Kirwan, Cleveland branch manager; H. O. Lang, Detroit branch manager.

Hayes, Inc., C. I., Providence. Booth 38. Carl I. Hayes, president; James E. Hines, vice-president and sales manager; Carl G. Paulson, sales engineer, and Charles H. Myrick, metallurgist.

Haynes Stellite Company, Kokomo, Ind. Booth 82. E. F. Smith, Chicago district sales manager; W. A. Becker, F. P. Shephard, sales engineer.

Heppenstall Company, Pittsburgh. Booth 7-L. C. W. Heppenstall, president; B. B. Weinberg, vice-president; D. A. Stuart, in charge of booth; F. C. Moyer, Detroit representative; J. A. Succop, research engineer; A. L. Wurster, Philadelphia special representative; G. I. Allen, Cleveland representative; L. A. Daines, Chicago representative; Mielke & Bemm, Milwaukee representative; A. J. Porter, Jr., sales manager Heppenstall Company, Bridgeport; C. J. Sauer, vice-president Heppenstall Company, Bridgeport; G. O. Desautels, Indianapolis representative; O. W. Mueller, Buffalo representative.

Hevi Duty Electric Company, Milwaukee. Booth 79. E. L. Smalley, president; F. A. Hansen, general manager; W. B. Cooley, sales manager; E. R. Brandau, Detroit district manager; F. J. Condit, Buffalo district manager; J. S. Ayling, Cleveland district manager; L. W. Hayden, Philadelphia district manager; E. G. Craig, New York district manager; C. H. Stevenson, Chicago district manager; H. L. Dunn, St. Louis district manager; F. Bathke, St. Paul district manager.

Holcroft & Co., Detroit. Booth 49. C. H. Martin, Chicago district manager; Bill Linsay, Detroit sales engineer, C. L. Joy, engineer, and R. T. Cadwell, vice-president.

Hoskins Manufacturing Company, Detroit. Booth 30. C. F. Busse, salesman; F. D. Archer, salesman; C. S. Kinnison, advertising manager; W. D. Little, sales manager; W. A. Gatward, chief engineer.

Houghton & Co., E. F., Philadelphia. Booth 35-B. G. W. Pressell, general sales manager, Philadelphia; H. E. Cressman, assistant general sales manager, Chicago; G. S. Rogers, assistant general sales manager, St. Louis; Wilbur J. Wright, Cleveland, Ohio; R. S. Crowell, F. J. Elliott, Reese Nelson, E. H. MacInnes, E. H. Kellogg, M. B. Skipper, W. L. Spencer, H. W. Vanderwall, Carl Wickbom.

Hyro Manufacturing Company, Inc., New York. Booth 77.

Illinois Steel Company, Chicago. Booth 12-B.

Illinois Testing Laboratories, Inc., Chicago. Booth 26-D. J. A. Obermaier, engineer in charge; M. D. Pugh, sales manager; C. L. Schmal, representative.

Illinois Tool Works, Shakeproof Lock Washer Company, Wedge Lock

(Continued on Page 9)

WESTINGHOUSE LAMP CO. ADOPTS ANNUITY PLAN

Newark, N. J., Sept. 23.—Approximately 5,000 employees of the Westinghouse Lamp Company, with plants at Bloomfield, Trenton and Belleville in this state are now participants in the Westinghouse annuity plan.

The company is a subsidiary of the Westinghouse Electric and Manufacturing Company, which has adopted this plan for its 45,000 employees, this later addition making a total of more than 50,000 employees who will be protected and provided for when they reach retirement age. The plan provides for bonuses to employees who purchase in any year a number of units equal to those provided by the company. It is possible for an employee to work out a program that will provide a retirement income equal to from 60 to 90 per cent. of his average yearly earnings in the company.

VANADIUM CORPORATION INCREASES ITS OUTPUT

Niagara Falls, N. Y., Sept. 23.—Production schedules have been materialy improved this month at the plant of the Vanadium Corporation of America, occupying a thirty-acre site in this city. A total of fourteen electric furnaces are operating at close to capacity, turning out ferro-silicon, ferro-manganese, ferro-chromium and other products. The company owns a rich deposit of vanadium ore in Peru and has a half interest in the Rhodesian Vanadium Corporation, from which a sizable supply of chromium is obtained. A the present time the plant here is supplying a large part of the chrome requirements of the automobile and steel industries.

SHELLER MFG. TO MAKE HUDSON STEERING WHEELS

Portland, Ind., Sept. 23.—A contract for the making of steering wheels for Hudson cars has been obtained by the Sheller Manufacturing Company here, it was announced. Production on the order will be started early next month, it was reported.

SURFACE COMBUSTION CO. BUYS COOPER-BESSEMER

New York, Sept. 23.—Negotiations have just been completed for the transfer of control of Chapman-Stein Company, a subsidiary of C. J. Cooper-Bessemer Company of Mount Vernon, O., to the Surface Combustion Company of Toledo, a Henry L. Doherty & Co. subsidiary.

Both companies are outstanding manufacturers of industrial heating equipment in their respective fields. Chapman-Stein specializes in soaking pits and furnaces in the roughing operation of the steel industry, while Surface Combustion Company specializes in gas-fired industrial furnaces for the finishing operations in the steel mill and automotive fields.

Balance!..No motorist can quite define it, but every motorist wants it in the car he buys. And he knows he's got it the minute he takes the road in a car with the New Budd All-Steel Body. He knows it by the way the car grips the road, by the way it skims the turns. The reason? This body is designed integrally with the chassis; it makes the center of gravity lower. The New Budd Body makes a car lighter in weight, too, without sacrificing strength—and is permanently quiet.

EDWARD G. BUDD MFG. CO.

PHILADELPHIA AND DETROIT

DEALER DOINGS

Newark, N. J., Sept. 23.—The Morgan Motor Car Company has moved to its new building at 23-25 Elizabeth Ave. Suitable sales and service accommodations have been provided for at the new place and there is room to build on adjacent lots in case of need of more space.

Detroit, Sept. 23.—Seebaldt-Evans, Inc., has been opened at 4,400 Woodward Ave., here, by John F. Evans and Clarence E. Seebaldt. The company will distribute Cord and Auburn cars in this city and eastern Michigan.

Nashville, Tenn., Sept. 23.—The Dressler-White Company, Chevrolet dealer here, has moved to 210 Woodland St.

Cheyenne, Wyo., Sept. 23.—The Fleischli Garage Company has been appointed Studebaker distributor in this city.

Raleigh, N. C., Sept. 23.—A charter has been granted to the Bantam Motor Company of Hendersonville, to deal in automobiles, trucks, cars, boats, flying machines and other vehicles and their accessories. Authorized stock, $100,000. Subscribed stock, $5,000, by William F. Kirk, A. R. Hanson and G. J. Wile of Hendersonville.

San Antonio, Tex., Sept. 23.—The Winerich Motor Sales Company, Studebaker distributor, has taken over the distribution of a line of radios for automobiles. The set carried, is the Amfico Caradio, a 5-tube set so installed that interference from the ignition is eliminated. William Winerich is manager.

Newark, N. J., Sept. 23.—The Hillas Motor Car Company of Newark, Elizabeth, Bloomfield and Harrison, announces that it will move its used cars to its new building at Central Avenue and 12th Street.

KEY TO ABBREVIATIONS USED IN THIS TABLE

*In addition to its regular line Oldsmobile also offers a de luxe line. De luxe equipment includes: Six wire wheels (with six tires and tubes), two wheels carried in front fender wells and securely locked in position, chromium-plated headlamps, four spring boots, folding trunk rack at rear and sheet metal fenders, etc., ducoed in color on those models on which ducoed sheet metal is more harmonious than is black enameled sheet metal. It is also a special line for 1930.

SPEEDOMETER

AC—AC Spark Plug Co., Flint, Mich.
NE—North East Appliance Corp., Rochester, N. Y.
Ste—Stewart-Warner Speedometer Corp., Chicago.
*Var—Various makes.

CLOCK

Borg—Borg Clock Co.
Jag—Jaeger Watch Co., New York city.
NH—New Haven. See Phi.
Phi—Phinney-Walker Co., New York city.
Ster—Sterling Clock Co., La Salle, Ill.
Tho—Seth Thomas Clock Co., New York, N. Y.
Wal—Waltham Watch Co., Waltham, Mass.
*Optional.

FUEL GAUGE

AC—AC Spark Plug Co., Flint, Mich.
K-S—King Seeley Corp., Ann Arbor, Mich.
Mot-M—Moto Meter Gauge and Equipment Corp., Long Island City, N. Y., and La Crosse, Wis.
Ster—Sterling Clock Co., La Salle, Ill.

LOCK

BS—Briggs-Stratton Co., Milwaukee.
Ele—Mitchell Specialty Co., Holmesburg, Pa.
DR—Delco-Remy Corp., Anderson, Ind.
Her—Hershey Mfg. Co., Chicago.
Joh—Johnson Automobile Lock Co., St. Louis, Mo.
NE—North East Appliance Corp., Rochester, N. Y.
Sha—Shaler Lock Co., Milwaukee, Wis.
Yal—Yale & Towne Mfg. Co., Stamford, Conn
*Reo Model 15 uses Mitchell.

SPARK PLUG

AC—AC Spark Plug Co., Flint, Mich.
Cha—Champion Spark Plug Co., Toledo, O.

BATTERY

Ex—Electric Storage Battery Co., Philadelphia.
Nat—National Lead Battery Co., St. Paul, Minn.
Pre—Prest-O-Lite Co., Indianapolis, Ind.
USL—U S L Battery Corp., Niagara Falls, N. Y.
Wil—Willard Storage Battery Co., Cleveland, O.
*Var—Various makes—Exide, Willard, Delco-Remy and USL.
**Both Exide and Delco-Remy used.

HEAT INDICATOR

AC—AC Spark Plug Co., Flint, Mich.
Mot-M—Moto Meter Gauge and Equipment Corp., Long Island City, N. Y., and La Crosse, Wis.
Ste—Stewart-Warner Speedometer Corp.
Ster—Sterling Clock Co., La Salle, Ill.

CIGAR LIGHTER

*Cigar lighters in many cases are optional equipment, and are not standard on all models; the names of lighters shown indicate the makes supplied to various car makers.
Cas—Casco Products Corp., Bridgeport, Conn.
GR—Grand Rapids Metalcraft Corp., Grand Rapids, Mich.
NE—North East Appliance Corp., Rochester, N. Y.
Cuno—Cuno Engineering Corp., Meriden, Conn.

Passenger Car Equipment and Accessories

NAME AND MODEL	Speedometer	Clock	Fuel Gauge on Dash	Lock	Spark Plugs	Battery	Heat Indicator	*Cig. Lighter	Smoking Set	Vanity Set	Make of Body Finish Used	Stop Light	Parking or Side Light	Windshield Wings	Heater	Front Bumper	Rear Bumper	Wire Wheels	Shock Absorber
Auburn 8-95	Ste	—	K-S	Ele	Cha	USL	Mot-M	Cas	GR	—	Mur	Ind	Ind	—	*Gla	Yes	Yes	Day	Lov
Auburn 6-85	Ste	—	K-S	Ele	Cha	USL	Mot-M	Cas	—	—	Mur	Ind	Ind	—	*Kel	Yes	Yes	Day	Lov
Auburn 125	Ste	—	K-S	Ele	Cha	USL	Mot-M	Cas	GR	—	Mur	Ind	Ind	—	*Gla	Yes	Yes	Day	Lov
Austin	NE	—	K-S	BS	Cha	USL	—	—	—	—	Duc	—	—	—	—	Cen	Cen	—	Own
Blackhawk 6	Ste	Wal	Mot-M	DR	Cha	Pre	Mot-M	Cas	Lin	Lin	Val	Ind	Ind	Kok	—	Buck	Buck	K-H	Lov
Blackhawk 8	Ste	Wal	Mot-M	DR	Cha	Pre	Mot-M	Cas	Lin	Lin	Val	Ind	Ind	Kok	—	Buck	Buck	K-H	Lov
Buick 8-50	AC	—	K-S	Her	AC	**Opt	AC	—	Tern	—	Duc	Gui	Gui	—	—	—	—	K-H	Lov
Buick 8-60	AC	—	K-S	Her	AC	**Opt	AC	—	Tern	—	Duc	Gui	Gui	—	—	—	—	K-H	Lov
Buick 8-80	AC	—	K-S	Her	AC	**Opt	AC	—	Tern	—	Duc	Gui	Gui	—	—	—	—	K-H	Lov
Buick 8-90	AC	—	K-S	Her	AC	**Opt	AC	Cas	Tern	Tern	Duc	Gui	Gui	—	—	—	—	K-H	Lov
Cadillac	AC	Jag	Mot-M	DR	AC	Ex	AC	Cas	Tern	Tern	Duc	Hal	Hal	—	*Kel	Eat	Eat	K-H	Lov
Cadillac 452	AC	Jag	Mot-M	DR	AC	Ex	AC	Cuno	Tern	Tern	Duc	Hal	Hal	—	*Opt	Eat	Eat	Buffalo	Lov
Chevrolet	AC	—	AC	DR	AC	*Var	AC	—	Tern	—	Duc	Gui	Gui	—	*Own	†Own	Own	K-H	Lov
Chrysler 80	NE	Ster	Mot-M	Ele	AC	Wil	Mot-M	Cas	AWS	AWS	Duc	Hal	Hal	Per	—	NM	NM	MotoW	Hou
Chrysler 70	NE	*Wal	Mot-M	Ele	AC	Wil	Mot-M	Cas	AWS	AWS	Duc	Hal	Hal	Per	—	NM	NM	MotoW	Lov
Chrysler 66	NE	*Wal	Mot-M	Ele	AC	—	Mot-M	Cas	—	—	Duc	Hal	Hal	—	—	—	—	‡	—
Cord Front Drive	Ste	No	Mot-M	DR	Cha	USL	Ster	Cas	GR	No	Mur	Ind	Ind	No	No	Alloy	Alloy	Day	Hou
De Soto 6	Yes	No	Yes	Yes	AC	Wil	No	No	Yes	Yes	Duc	Yes	Hal	No	No	Yes	Yes	†MotoW	Yes
De Soto 8	Yes	No	Yes	Yes	AC	Wil	Yes	No	Yes	Yes	Duc	Yes	Hal	No	No	Yes	Yes	†MotoW	Yes
Dodge DD	NE	—	Mot-M	—	AC	Wil	—	—	VS	VS	—	Hal	—	—	—	Yes	Yes	†Budd	Lov
Dodge 8	NE	—	Mot-M	—	AC	Wil	Mot-M	—	VS	VS	—	Hal	—	—	—	Yes	Yes	MotoW	Lov
Durant 6-14	NE	No	Mot-M	Ele	AC	USL	Mot-M	No	—	—	—	Cor	—	—	—	Eat	Eat	MotoW	Mon
Durant 6-17	NE	No	Mot-M	Ele	AC	USL	Mot-M	GR	—	—	—	Cor	—	—	—	—	—	MotoW	Mon
Elcar 6-75	Ste	—	Mot-M	Sha	Cha	USL	Mot-M	Cas	—	—	Mur	Hal	Hal	—	—	Ste	Ste	K-H	Gab
Elcar 8-95	Ste	—	Mot-M	Sha	Cha	USL	Mot-M	Cas	—	—	Mur	Gui	Gui	—	—	Ste	Ste	K-H	Gab
Elcar 8-96	Ste	Borg	Mot-M	Sha	Cha	USL	Mot-M	Cas	—	—	Mur	Hal	Hal	—	—	Ste	Ste	K-H	Gab
Elcar 8-130	Ste	Borg	Mot-M	Sha	Cha	USL	Mot-M	Cas	—	—	Mur	Hal	Hal	—	—	Ste	Ste	K-H	Gab
Elcar 140	Ste	Borg	Mot-M	Sha	Cha	USL	Mot-M	Cas	Yes	—	Mur	Hal	Hal	—	—	Ste	Ste	K-H	Gab
Essex 6	Ste	—	Mot-M	Ele	AC	Ex	Mot-M	—	—	—	—	JB	JB	—	—	Own	Own	MotoW	Mon
Ford A	*Var	—	Own	Ele	Cha	Own	—	—	—	—	—	Yes	—	—	—	—	—	Own	Hou
Franklin 145-147	NE	*Jag	K-S	Yal	Cha	USL	—	Cas	GR	GR	*Duc	Cor	Cor	—	Kel	Gen	Gen	MotoW	Wahl
Gardner 150	Ste	*Borg	Mot-M	DR	Cha	Pre	Mot-M	Cas	VS	VS	†Ditz	—	Cor	—	—	—	—	MotoW	Lov
Gardner 140	Ste	*Borg	Mot-M	DR	Cha	Pre	Mot-M	Cas	VS	VS	†Ditz	—	Cor	—	—	CG	CG	MotoW	Lov
Gardner 136	Ste	*Borg	Mot-M	DR	Cha	Pre	Mot-M	Cas	VS	VS	†Ditz	—	Cor	—	—	CG	CG	MotoW	Lov
Graham Stan. 6	NE	—	K-S	Her	Cha	Wil	Mot-M	—	GR	GR	—	Hal	Hal	—	—	Ste	Ste	MotoW	Lov
Graham Sp. 6	NE	—	K-S	Her	Cha	Wil	Mot-M	—	GR	GR	—	Hal	Hal	—	—	Ste	Ste	MotoW	Lov
Graham Stan. 8	NE	—	K-S	Her	Cha	Wil	Mot-M	—	GR	GR	—	Hal	Hal	—	—	Ste	Ste	MotoW	Lov
Graham Sp. 8	NE	—	K-S	Her	Cha	Wil	Mot-M	—	GR	GR	—	Hal	Hal	—	—	Ste	Ste	MotoW	Lov
Graham Cust. 8	NE	*Ster	K-S	Her	Cha	Wil	Mot-M	Cas	GR	GR	—	JB	JB	—	—	Ste	Ste	MotoW	Hou
Hudson 8	Ste	—	Mot-M	Ele	AC	Ex	Mot-M	—	—	—	—	Hal	Hal	—	—	Own	Own	MotoW	Gab
Hupmobile Cen. 6	Ste	Wal	Mot-M	Ele	Cha	Wil	Mot-M	Cas	VS	—	Val	Hal	Hal	—	—	—	—	K-H	Gab
Hupmobile Cen. 8	Ste	Wal	Mot-M	Ele	Cha	Wil	Mot-M	Cas	VS	—	Val	Hal	Hal	—	—	—	—	K-H	Gab
Hupmobile U	Ste	Wal	Ster	Ele	Cha	Wil	Mot-M	Cas	VS	—	Val	Hal	Hal	—	—	—	—	K-H	Gab
Hupmobile H	Ste	Wal	Ster	Ele	Cha	Wil	Mot-M	Cas	VS	—	Val	Hal	Hal	—	—	—	—	K-H	Gab
Hupmobile C	Ste	Wal	Mot-M	Ele	Cha	Wil	Mot-M	Cas	VS	—	Val	Hal	Hal	—	—	—	—	K-H	Gab
Jordan Mod. 8 G	Ste	Ster	Mot-M	Her	Cha	Wil	Mot-M	Cas	GR	—	Ditz	Ind	JB	—	—	Cen	Cen	K-H	Gab
Jordan Mod. 8 T	Ste	—	Mot-M	Her	Cha	Wil	Mot-M	—	VS	—	Ditz	Ind	Ind	—	—	Cen	Cen	K-H	Gab
La Salle	AC	Jag	Mot-M	DR	AC	Ex	AC	Cas	Tern	Tern	Duc	Hal	Hal	—	*Kel	Eat	Eat	K. H	Lev
Lincoln 8	NE	Tho	K-S	Her	Cha	Ex	Mot-M	Cas	Cuno	Yes	Duc	Own	Own	Own.	—	Bif	Bif	Own	Hou
Mar.-Roosev'lt 8	Ste	—	Mot-M	DR	Cha	Nat	—	—	—	—	Val	Vic	Vic	—	—	Ste	Ste	†Budd	Lov
Marmon Eight-69	NE	—	Mot-M	DR	Cha	Nat	Mot-M	—	GR	—	Val	Cor	—	Kok	—	CG	CG	†Budd	Wahl
Marmon Eight-79	NE	—	Mot-M	DR	Cha	Nat	Mot-M	Cas	—	GR	Val	Cor	—	Kok	—	CG	CG	†Day	Wahl
Marmon Big 8	NE	*Ster	Mot-M	DR	Cha	Nat	Mot-M	Cas	—	GR	Val	Cor	—	Kok	—	CG	CG	†Day	Wahl
Nash Tw. Ign. 8	AC	Borg	K-S	DR	AC	USL	Mot-M	Yes	GR	GR	Duc	Hal	Hal	—	—	Eat	Eat	MotoW	Lov
Nash Tw. Ign. 6	AC	—	K-S	DR	AC	USL	Mot-M	—	AWS	—	Duc	Hal	Hal	—	—	Ste	Ste	MotoW	Lov
Nash Single	AC	—	K-S	DR	AC	USL	AC	—	—	—	Duc	JB	JB	—	—	Ste	Ste	MotoW	Lov
Oakland 8	NE	—	K-S	DR	AC	Wil	—	—	Tern	Tern	Duc	Gui	Gui	—	—	Own	Own	MotoW	Lov
***Oldsmobile**	AC	—	K-S	DR	AC	Wil	AC	—	Tern	—	Duc	Gui	—	—	—	Own	Own	MotoW	Lov
Packard 726-733	NE	Jag	K-S	BS	Cha	Pre	Mot-M	Cas	Own	Yes	Val	Hal	Hal	†Bif	Kel	Cen	Yes	MotoW	Own
Packard 740-745	NE	*Jag	K-S	BS	Cha	Pre	Mot-M	Cas	Own	Yes	Val	Hal	Hal	†Bif	Kel	Cen	Yes	MotoW	Own
Peerless Stand. 8	AC	Ster	Mot-M	BS	Cha	Wil	Mot-M	Cas	GR	No	Val	Cor	Cor	No	No	Cen	Cen	†Budd	Gab
Peerless Mast. 8	AC	Ster	Mot-M	BS	Cha	Wil	Mot-M	Cas	GR	No	Val	Gui	Cor	—	—	Eat	Eat	Day	Gab
Peerless Cust. 8	AC	Ster	Mot-M	BS	Cha	Wil	Mot-M	Cas	GR	No	Val	Gui	Cor	—	—	Eat	Eat	Day	Gab
Pierce-A., C, B, A	NE	Wal	Mot-M	Her	Cha	Wil	Mot-M	NE	VS	VS	—	Aga	Aga	—	—	Eat	Eat	K-H	Hou
Plymouth	NE	—	Mot-M	Sha	AC	Wil	—	—	—	—	Duc	Hal	Hal	—	—	Gen	Gen	‡	—
Pontiac	AC	—	K-S	DR	AC	Pre	—	—	Tern	—	Duc	Gui	Gui	—	—	Own	Own	MotoW	Lov
Reo 15, 20, 25	Ste	—	K-S	*DR	Cha	Wil	AC	—	VS	VS	—	†Gui	—	—	—	§CG	§CG	MotoW	*Lov
Ruxton	Ste	Jag	Mot-M	Her	AC	Wil	Mot-M	Own	Own	Own	Duc	Cor	Wood	Own	—	CG	CG	—	Hou
Studebaker Six	Ste	—	K-S	Yal	Cha	Wil	Mot-M	—	—	—	—	Ind	—	—	No	Eat	Eat	K-H	Lov
Studebak'r Dict. 8	Ste	—	K-S	Yal	Cha	Wil	Mot-M	—	—	—	—	Ind	Gui	—	—	Ste	Ste	K-H	Lov
Stud. Com. 8-70	Ste	—	K-S	Her	Cha	Wil	Ste	—	—	—	—	Gui	—	—	—	Ste	Ste	K-H	Hou
Stud. Pres. 8-80	Ste	NH	K-S	Her	Cha	Wil	Ste	Cas	*Var	—	—	Gui	—	—	—	Ste	Ste	K-H	Hou
Stud. Pres. 8-90	Ste	NH	K-S	Her	Cha	Wil	Ste	Cas	—	—	—	Gui	Gui	—	—	Ste	Ste	K-H	Hou
Stutz	Ste	Wal	Mot-M	DR	Cha	Pre	Mot-M	Cas	Lin	Lin	Val	Ind	Ind	Kok	—	Buck	Buck	K-H	Gab
Viking 8	AC	—	K-S	DR	AC	Wil	AC	—	VS	VS	Duc	Gui	—	—	—	Own	Own	MotoW	Lov
Whippet 96 A	NE	No	No	Ele	Cha	USL	No	—	No	No	Var	Yes	No	No	No	No	No	Buffalo	Mon
Willys 6-98 B	NE	No	Mot-M	Yes	Cha	USL	Mot-M	—	—	No	Var	Yes	Yes	No	No	No	No	†K-H	Mon
Willys 8-80	NE	No	Mot-M	Yes	Cha	USL	Mot-M	—	Yes	No	Var	Yes	Yes	No	No	No	No	†K-H	Mon
Willys-Knight 87	NE	No	Mot-M	Ele	Cha	USL	Mot-M	—	—	No	Var	Yes	Yes	No	—	No	No	†Budd	Mon
Willys-K. 66B	NE	No	Mot-M	Ele	Cha	USL	Mot-M	—	No	—	Var	Yes	Yes	No	No	No	No	*Budd	Wat
Windsor 6-69	Ste	—	Mot-M	Sha	Cha	Nat	Mot-M	—	—	—	Gli	JB	JB	—	—	†Yes	†Yes	†Budd	Lov
Windsor 6-72-77	Ste	—	Mot-M	DR	Cha	Nat	Mot-M	—	Yes	Yes	Gli	JB	JB	—	—	†Yes	†Yes	†Budd	Lov
Windsor 8-85	Ste	—	Mot-M	Joh	Cha	Nat	Mot-M	—	Yes	Yes	Gli	JB	JB	—	—	†Yes	†Yes	†Budd	Lov
Windsor 8-92	Ste	—	Mot-M	DR	Cha	Nat	Mot-M	—	Yes	Yes	Gli	JB	JB	—	—	†Yes	†Yes	†Budd	Lov

SMOKING AND VANITY SETS

AWS—Art Metal Works, Newark, N. J.
GR—Grand Rapids Metalcraft Corp., Grand Rapids, Mich.
Lin—Linden.
VS—Van Sicklen Corp., Elgin, Ill.
*Extra equipment on Reo Model 15.
Tern—Ternstedt Mfg. Co., Detroit, Mich.
Cuno—Cuno Engineering Corp., Meriden, Conn.
*Var—Various makes.

BODY FINISH

Ditz—Ditzler Color Co., Detroit, Mich.
Duc—E. I. du Pont de Nemours & Co., Philadelphia.
Gli—Glidden Co., Cleveland, O.
Mur—Murphy Varnish Co., Newark, N. J.
Val—Valentine & Co., New York city.
*Various other lacquers used.
†Also Gli.

STOP AND PARKING LIGHTS

Cor—Corcoran Lamp Co.
Vic—Cincinnati-Victor Co., Cincinnati, O.
Aga—Federal Pressed Steel Co., Chicago.
Gui—Guide Lamp Corp., Anderson, Ind.
Hal—C. M. Hall Lamp Co., Detroit, Mich.
Ind—Indiana Lamp Corp., Connersville, Ind.
Ryan—Ilco Sales Corp., Detroit.
Sto—Stover Signal Engineering Co., Racine, Wis.
JB—The Jno. W. Brown Lamp Mfg. Co., Columbus, O.
Wood—Woodlite, Ltd., Los Angeles, Cal.
†Reo Model 15 uses Hall.

WINDSHIELD WINGS

Kok—Kokomo Automoive Mfg. Co.
*Extra equipment on the Reo 15.
Per—Perfection Co., Chicago.
Bif—Biflex Oakes Products Corp., North Chicago, Ill.
†Not standard equipment.

HEATER

Gla—Gladiator Mfg. Co., Auburn, Ind.
Kel—Kelch; made by Grand Rapids Metalcraft Corp., Grand Rapids, Mich.
Per—Eaton Axle & Spring Co., Cleveland.
Wahl—Wahl Company, Chicago, Ill.
*Special equipment.
*Optional.

BUMPERS

Alloy Steel Spring & Axle Co., Jackson, Mich.
Bad—Badger Mfg. Corp., Milwaukee.
Bif—Biflex Corp., Waukegan, Ill.
Buck—See Cen.
Cen—Central Brass & Fixture Co., Springfield, O. Also makers of Buckeye bumpers.
CG—CG Spring & Bumper Co., Detroit.
Eat—Eaton Axle & Bumper Co., Cleveland.
Gen—General Spring and Bumper, Detroit.
N-M—New Method Sales Co., Allegan, Mich.
Ste—Stewart-Warner Speedometer Corp., Chicago.
†Extra equipment.
*Also using Eat.
‡Extra equipment on Reo Model 15.

WIRE WHEELS

Budd—Budd Wheel Co., Detroit, Mich.
MotoW—Motor Wheel Corp., Lansing, Mich.
Day—Dayton Wire Wheel Co., Dayton, O.
K-H—Kelsey-Hayes, Detroit, Mich.
Buffalo—Wire Wheel Corp. of America, Buffalo, N. Y.
*On some models.
**Using both Budd and Kelsey-Hayes.
†Not standard equipment.
‡Using both Kelsey-Hayes and Motor Wheel Corp.

SHOCK ABSORBERS

Gab—The Gabriel Company, Cleveland.
Hou—Houde Engineering Corp., Buffalo, N. Y.
Lov—Delco Products Corp., Dayton, O.
Mon—Monroe Auto Equip. Mfg. Co., Monroe, Mich.
Wahl—Wahl Co., Chicago, Ill.
Wat—John Warren Watson Co., Philadelphia.
*Extra equipment on Reo.

Corrosion and Heat Resistant Nickel-Copper-Chromium Cast Iron Alloy

By J. S. Vanick and P. D. Merica

Several years ago, during the earlier experimental work on nickel cast iron, a preliminary series of tests demonstrated, as had been anticipated, the substantial corrosion resistance of the austensitic nickel cast irons containing upwards of 15 per cent. nickel. Realizing the possible industrial value of a really corrosion resistant and reasonably cheap cast iron, further work was at once initiated looking to the development and refinement of this type of material. The composition of such a material is given below:

	Min.	Max.		Min.	Max.
Total Carbon	2.75%	3.10%	Maganese	1.00%	1.50%
Silicon	1.25	2.00	Nickel	12.00	15.00
Sulphur	0.04	0.120	Copper	5.00	7.00
Phosphorus	0.04	0.30	Chromium	1.50	4.00

Applications

One of the chief assets of this corrosion resisting iron is its low cost. Its application is useful wherever a corrosion or heat resistance superior to that of plain cast iron is necessary.

It is non-magnetic and this characteristic has led to the active consideration of its introduction in the electrical industry.

Its high coefficient of thermal expansion has led to its application as a sleeve in internal combustion engines, airplane, automobile and marine engines, in conjunction with trunk, type aluminum alloy pistons, which possess a corresponding expansion under heating.

Its resistance to growth and scaling have led it into applications requiring high-temperature stability, and it has substantially reduced the occurrence of fire-cracks or surface checking and practically eliminated the difficulties grouped under the failures attributed to "thermal stresses."

The ease with which this material has been handled in the foundry and shops and the emphatic way in which it has answered the need for a cast iron of exceptional merit in its particular field, has enabled it to establish itself firmly and in daily increasing amounts for numerous applications which make use of its special properties.

Development of Nickel-Copper-Chromium Cast Iron

The early work in the development of this cast iron consisted of following the effects upon physical properties and corrosion resistance of nickel additions to plain cast iron. It was known that plain iron began to harden appreciably as the nickel content increased above 2 per cent. It was also known that at some 5 or 6 per cent. nickel this hardness attained a value of 250-280 Brinell and the machining speeds gradually decreased, although the iron retained machinability and was uniformly hard and completely gray. Larger amounts of nickel continued to increase the hardness until, at some 8 to 12 per cent., this factor attained maximum values ranging in the neighborhood of 320 to 360 Brinell. Still larger additions of nickel were accompanied by a pronounced softening, and in the neighborhood of 18 to 20 per cent. nickel the hardness would fall to as low as 120 Brinell, or be considerably softer than the original unalloyed cast iron. At this point the iron was readily machinable and it possessed considerable toughness, so that it could be bent some three or five times deeper than plain iron in the transverse test. As the nickel content increased, the iron became less and less magnetic and finally ceased to be attracted by the magnet at all. This effect was naturally interpreted to indicate the complete austenitization of the material and the transformation of all of the iron from alpha to gamma. Corrosion curves illustrating the change in corrosion rate with increasing nickel over the range of zero to 20 per cent., generally showed a gradually lessened corrosion rate as the nickel content increased to something like 10 per cent., but above this and within the range of 12 to 18 per cent. nickel, an abrupt decrease in corrosion rate was obtained. A further increase in nickel content, above the 18-20 per cent. range, would produce a persistent though gradual decrease in the rate of corrosion. For example, in these higher percentages, of 20 to 40 per cent. nickel, a corrosion rate which in plain iron amounted to 400 mdd. would be reduced to 20 mdd. at 20 per cent. of alloy, while another 20 per cent. would reduce the rate to perhaps 10 mdd. This indicated that in the high alloy, or 20 to 40 per cent. nickel or nickel plus copper range, the improvement in corrosion resistance for each increment of nickel above 20 per cent. was entirely out of proportion to that obtained either in the low nickel ranges or in the range from zero to 20 per cent. For this reason, it became evident that the most pronounced decrease in corrosion could be expected in an iron containing nickel in the range of 15 to 20 per cent. Within this same range, the hardness fell off rapidly so that the iron became easily machinable again, and this factor, along with the change in corrosion rate, indicated that the best performance for the least cost could be expected in the range of 15 to 20 per cent. of nickel. Fig. 1 illustrates typical hardness and corrosion curves.

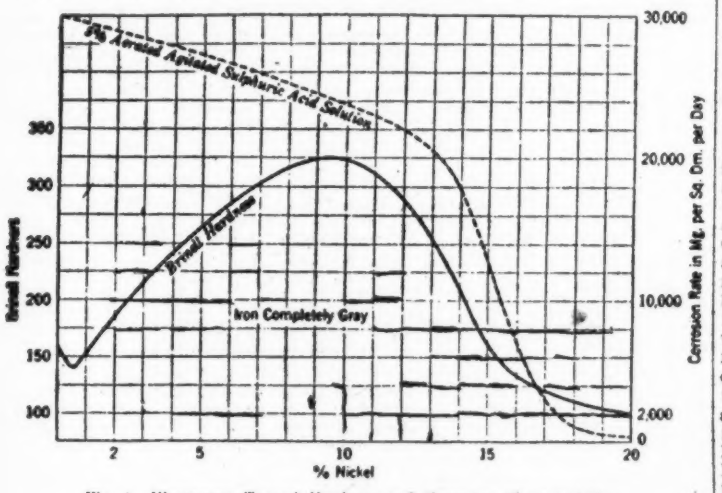


Fig. 1 Illustrating Typical Hardness and Corrosion Characteristics

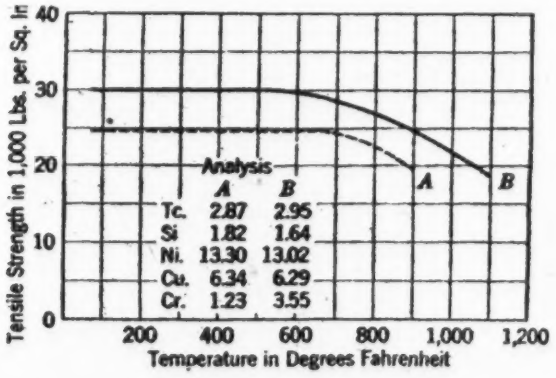


Fig. 2—Tensile Strength of Two Specimens A and B. Composition is Shown on Chart.

In order to reduce the cost of the material still further, copper additions were substituted for part of the nickel within certain limits. These limits were guided largely by the solubility of copper in cast iron. Knowing that the copper can be made soluble in iron if it is accompanied by a suitable amount of nickel, full advantage of this fact was taken. The results indicated that the effect upon corrosion rate in many corrosives was not detrimental, and, as a matter of fact, it was found that the properties of the alloyed iron were improved in several ways. For example, the copper addition enabled a number of corrosives, such as sulphuric acid, to be better resisted and its presence also increased the types of solutions which the iron might successfully resist. Some 6 per cent. of copper could be accommodated in the mixture and replaced an equivalent amount of nickel, so that the resulting product was less expensive. Finally, the presence of copper lowered the melting and solidification ranges and permitted a greater fluidity in the metal, with the result that the iron retained its life practically as long as ordinary cast iron and could be cast into as thin and as intricate shapes.

Some mention might be made at this point concerning the high manganese content which is recommended in the specification. Some time after the properties and corrosion resistance of the composition had been established, it was found that the iron showed some tendency to become slightly martensitic at temperatures around minus fifty degrees Fahrenheit. This unstability was registered in a tendency to become slightly magnetic and somewhat harder. Heating to room temperatures would almost eliminate the effect, and repeated cooling and warming indicated that it did not build up cumulatively, but merely affected perhaps less than 10 per cent. of the total matrix. This effect was not prevalent in the higher chromium types such as those containing 3.50 per cent chromium. On the other hand, the use of this amount of chromium to prevent the low temperature transformation caused the hardness to increase excessively at the expense of manganese contents in the range of chinability, as explained below. These effects were observed with normal manganese contents showed that the 0.30 to 0.60 per cent., and an investigation of the effects of higher use of 1.0 per cent. manganese in the specified composition reduced the low temperature change point to 135 degrees Fahrenheit below zero, and practically eliminted any risk of such a change occurring under ordinary climatic conditions. Raising the managanese to 1.50 per cent. further reduced this low temperature effect to 300 degress Fahrenheit below zero. For this reason, the higher manganese contents were recommended, particularly to protect equipment made of this material from a possible exposure to extremely low temperatures while the equipment was being transported through cold climates or being operated under low temperature conditions.

Mechanical Properties

The tensile properties of a 14 per cent. nickel, 6 per cent. copper cast iron, with the normal carbon and silicon contents, as described above, were rather low, and various expedients became necessary to make these properties comparable to those of ordinary cast iron. This can be done by lowering the silicon or carbon content or by adding chromium. The addition of chromium to the alloy appeared to be the most practical way of accomplishing this result and at the same time taking advantage of such useful properties as the chromium addition contributed. Since the iron without chromium might be as soft as 100 Brinell, the presence of something like 2 per cent. chromium brought it up to 140 Brinell, so that its hardness compared quite favorably with that of plain cast iron. Larger additions of chromium continued to increase the hardness, roughly, 20 points Brinell for each 1 per cent. additional chromium, so that at 6 per cent. chromium, a Brinell hardness of 220-240 is obtained. This hardness is somewhat excessive for ready machinability, and a limit of 2 to 3 per cent. chromium is usually recommended. The ability for the alloy to be hardened is helpful where greater resistance to wear and deformation is required in such applications as valves, pumps, impellers, feed screws, conveyors, mixers, etc. As a matter of fact, the iron can be chilled just as ordinary cast iron and a Brinell hardness of 350-400 attained. For most purposes, however, the free machining combined with good gray iron physical properties are desired and with this purpose in view a composition was standardized upon at approximately 14 per cent. nickel, 6 per cent. copper, 2 to 3 per cent. chromium, with carbon around 3.0 per cent. and silicon as in ordinary cast iron. Amsler wear tests of the brake-shoe type upon the alloyed iron of a standard composition against plain cast iron indicated that its wear resistance was nearly five times that of the plain iron under the same conditions. Naturally, wear tests require a close definition of details of procedure, but these results indicated quite definitely that the alloyed composition would wear well, presumably due to its inherent toughness as well as resistance to surface break-down under heat.

By varying the carbon and silicon composition, with other elements remaining the same, this iron will develop the following range of mechanical properties:

Arbitration bar transverse strength, 2,500—4,000 pounds.

Arbitration bar transverse reflection, 0.2—0.3 inches.

Tensile strength in 1¼-inch section, 20,000—35,000 pounds per square inch.

Brinell Hardness, 120—170.

(Range of values is shown which depends on composition; viz, chromium, carbon and silicon contents, along with the 14 per cent. nickel and 6 per cent. copper.)

Attention might be called to the relatively high deflection this iron shows in a transverse test, indicating a considerable increase in toughness. This factor is further confirmed by comparative data obtained on the Izod impact machine, using a special lightweight hammer which would yield a reading on the normal scale of 80 to 110 foot-pounds absorbed in specimens (¼x¾ inch) of the corrosion resisting cast iron, as against a reading of 9 to 15 foot-pounds absorbed in tests upon plain cast iron. This property has been an important factor in the adoption of the material in several installations requiring resistance to shock or impact.

Corrosion Resistance

Considerable work has been done toward determining the corrosion resistance of this alloyed iron in various corrosives both in the laboratory and in the industrial field. It is beyond the scope of this paper to include all of the corrosion data,

(Continued on Page 10)

COPELIN TO REPRESENT S.P.A.EXPORT CORP.ABROAD

South Bend, Ind., Sept. 23.—Philip W. Copelin, advertising manager of the Studebaker-Pierce-Arrow Export Corporation, has been promoted to special export representative, according to Howard S. Welch, president of the corporation.

Mr. Copelin sailed for Europe September 12 on the Ile de France.

Prior to Mr. Copelin's appointment as advertising manager, he served as European advertising manager for the Studebaker Corporation, with headquarters at Brussels, Belgium.

Today at the National Metal Congress

The following papers will be read at the several meetings of the societies taking part in the National Metal Congress in Chicago, Wednesday, September 24:

A. S. S. T.

Campbell Memorial Lecture

Oxygen in Steel—Dr. Marcus A. Grossmann, Republic Steel Corporation, Canton.

Radiography By the Use of Gamma Rays—R. F. Mehl, Naval Research Laboratories, Washington, D. C.; G. E. Doan and C. S. Barrett.

Critical Ranges in Pure Iron-Carbon Alloys—R. H. Harrington, General Electric Company, and W. P. Wood, University of Michigan, Ann Arbor, Mich.

Relationship Between Welded-On Overlays and Heat Treatment—Miles C. Smith, Stoody Company, Whittier, Cal.

Tungsten Carbon System—W. P. Sykes, General Electric Company, Cleveland.

Concentrated Pressure and Its Applications to the Rolling Process—Dr. A. Nadai, Westinghouse Electric and Manufacturing Company, East Pittsburgh.

A. S. M. E.

Automatic Polishing—Robert T. Kent, Devine Brothers, Utica, N. Y.

Repair of Worn Parts by Electro Deposition of Iron—T. P. Thomas, Westinghouse Electric and Manufacturing Company, East Pittsburgh.

2 P. M.

Case Hardening With Ammonia Gas—V. O. Homerberg and J. P. Walsted, Massachusetts Institute of Technology, Cambridge.

Nitriding Analyses—Their Physical Properties and Adaptability—R. Sergeson and M. M. Clark, Central Alloy Steel Company, Canton, O.

A. I. M. E.

General Technical Session, Institute of Metals Division.
W. R. Webster, chairman.
R. S. Dean, vice-chairman.

Influence of Casting Practice on the Physical Properties of Die Castings, by Charles Pack. (T. P. 346.)

Effect of Certain Alloying Elements on Structure and Hardness of Aluminum Bronze, by Selma F. Hermann and Frank T. Sisco. (T. P. 365.)

Thermal Conductivity of Copper Alloys. Part II. Copper-tin Alloys. Part III. Copper-phosphorus Alloys. By Cyril Stanley Smith. (T. P. 360.)

Application of X-Rays to Development Problems Connected With the Manufacture of Telephone Apparatus. By M. Baevertz. (T. P. 349.)

AMERICAN WELDING SOCIETY

E. A. Doyle, president, presiding.

Resistance Welding of Bar Joists, by Frank Burton, Steel Joist Institute.

Cost of Using Welding, by Robert E. Kinkhead, consulting engineer.

Strength of Welded Joints in Tubular Members for Aircraft, by H. L. Whittemore, United States Bureau of Standards.

Symposium on Testing of Welds, H. L. Whittemore, member committee on Standard tests for welds, presiding.

1. Introduction and Suggested Revision of ABW Bulletin No. 1, by ABW committee on standard tests for welds.
2. **Tensile Tests for Welds**, J. W. Owens.
3. **Bend Tests for Welds**, W. B. Miller.
4. **Shear Tests for Welds**, Andrew Vogel.
5. **Fatigue and Impact Tests for Welds**, C. H. Jennings.
6. **Testing of Welds**, by Gilbert E. Doan, Lehigh University.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

MERCHANDISING
ACCESSORIES
EQUIPMENT

WHOLESALE

DISTRIBUTION
SHOP EQUIPMENT
REPLACEMENTS

WHEELS, INC., LEASES LARGER N. Y. HOME

New York, Sept. 23.—The rapid growth and expansion of Wheels, Inc., has made it necessary to plan larger quarters for handling the various services, such as wheel repairs, wood, wire and disc wheels, painting and enameling, brake drum replacement and machining, cold axles straightening, Bendix brake shoe exchanges and brake relining.

The service plant now located at 835 5th Ave., this city, has been found inadequate and the entire building at 780 11th Ave., now occupied by the Renault Company, has been leased for a period of twelve years. This building is located at 54th Street, directly opposite the new Packard service station, and comprises 20,000 square feet, with ramp to the second floor.

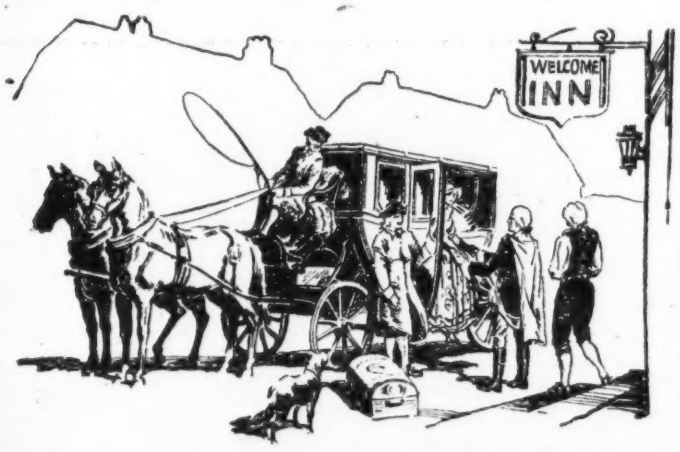
The 10,000 square feet on the ground floor of this building will be used for reception and inspection work, such as dynamic brake inspection and inspection of wheel alignment, as it has to do with steering geometry and unusual tire work.

By the expansion of its service facilities, Wheels, Inc., will establish this building as headquarters for engineering and technical advice on all subjects pertaining to brakes and steering geometry.

After extensive alterations to this building, to adapt it to its purposes, Wheels, Inc., expects to start on or about October 1.

ALLBESTOS OPENS NEW DENVER WAREHOUSE

Philadelphia, Sept. 23.—C. A. Grainger, general sales manager of Allbestos Corporation, has appointed as Denver representative the Gooding-Parsons Company, 1764 Lincoln St. A full stock is now carried in Denver for the convenience of jobbers in the Rocky Mountain section. This is the sixth Allbestos warehouse branch.



"AGLOW *with* FRIENDLINESS"

. . . succinctly expresses the atmosphere Hotel Fort Shelby has created and maintained through its vigorous and untiring devotion to the guests' welfare and comfort. ¶ The major percentage of Hotel Fort Shelby patronage embraces people who stop there every time they visit Detroit. They are genuinely appreciative of Fort Shelby's ability to administer to their needs courteously and efficiently. ¶ Hotel Fort Shelby's location in the heart of Detroit's shopping, theatre, financial, insurance and wholesale districts is a happy one; no other large hotel is so near the principal railway terminals, airports and steamship piers. 900 units . . . all equipped with servidor and private bath accommodations. Rooms as low as $3.00 per day . . . suites $10.00 and upwards.

Motorists are relieved of their automobiles at the door without service charge.

Write for Free Road Map

HOTEL Fort Shelby
"AGLOW WITH FRIENDLINESS"
E. J. BRADWELL, *Manager*
DETROIT

Editor's Column

THE modern trend of successful merchandising seems to smile broadly on those who make it easier for the consumer to purchase, according to Tom Duggan, merchandising service director of N. S. P. A., who goes on to give as examples: Kresge's, Woolworth's, Piggly Wiggly, Western Auto Supply Company, Montgomery Ward, Sears, Roebuck, J. C. Penny, and he says:

"In automotive merchandising, particularly replacement parts, the trend in the past has been to make it as hard and as complicated as possible for our customers (the repair shops, car dealers, etc.) to buy parts.

"The reason being," he continues, "that the conventional type of catalogue that has been used for so many years in our industry has had no standardization of terminology, no correlation of parts, and it has been very confusing to the trade who purchase the parts as well as to those who sell them.

"With few exceptions, the catalogue terminology of one line of pistons for a certain car, year and model is entirely different than another piston line for the same car. The same thing is true with valves, bearings, axles, gaskets, fan belts, timing chains, etc.

"So that when a repair job is being done on a certain car the person purchasing the necessary parts becomes confused when he finds that the specifications read different for one part than another on the same car.

"This confusion has cost the industry a great deal, not only in money but in lost time, for, when confronted with a lot of specifications that he doesn't understand, the average repair shop man calls his parts jobber for information. This, as a rule, not only costs the jobber a lot of time which could be used for more productive pursuits but also considerable money in telephone calls. With the average sale of the jobber being so small, he can ill afford this additional overhead.

"Another difficulty is when an order is written or phoned to the jobber by some out-of-town shop, and this repair shop, in ordering, uses another jobber's catalogue, who may handle different and competing lines, the jobber when receiving the order, as a rule, is unable to fill it complete without calling the customer once or twice on the phone, because the terminology of his catalogue is entirely different from that of his competitor, and you can imagine what happens to the net profit on a rural customer's order after a phone call or two, to say nothing of both their dispositions.

"The N. S. P. A. type of catalogue, which was designed, copyrighted and passed on to the association by one of its members, John C. Rogers of the Automobile Piston Company, Atlanta, is designed to eliminate those difficulties which are met with in the old style catalogue.

"First, it is so made that any one repairing a certain make car can turn to the page for that car and find on that one page all the parts necessary to complete the job.

"Second, this eliminates all confusion, for on one page, under the proper standardized car specification heading, the repair man can find the data on the parts he needs instead of looking in many different places. This helps to do some of the thinking for the repair trade.

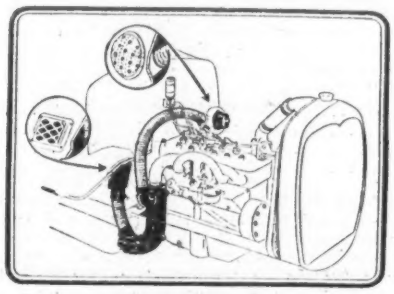
"Third, all parts are correlated according to their unit of assembly in the car or truck. Now, this is an advantage to the repairman, for it suggests the necessary parts to make the job complete. In the modern high-speed motor, for example, valve springs are at times just as essential for perfect operation as new valves.

"Fourth, this correlation is to be found only in this catalogue and should do much for the jobber in the raising of the average size of his unit sales, for any one making the purchase of a water-pump impeller will find, as a rule, that the average jobber salesman fails to suggest radiator clamps, etc., which are usually necessary. The same goes with many other related items. This type of catalogue automatically suggests them to both buyer and seller alike.

"Fifth, this catalogue should also cut down some of the jobber's overhead. Instead of making delivery of, say, some piston rings, piston pins and cylinder head gaskets, to a customer, and having the delivery car no more than get back to the store before this same customer wants some piston-pin bushings and some exhaust manifold gaskets sent over immediately, this new type of N. S. P. A. catalogue should eliminate these faults. It should also eliminate the calling back and forth between the customer and the jobbers as to questions of correct specifications or on the shipment of wrong parts, for with the standardizing of each page for each model car, with code for the car as well as the parts, there is hardly a chance for mistakes.

"Sixth, increasing the average sale in the jobber's place of business will automatically increase the replacement parts manufacturer's business, so that this catalogue goes further than just merely helping the repair man and the jobbers."

Cooper Offers 3 New Blower Type Heaters

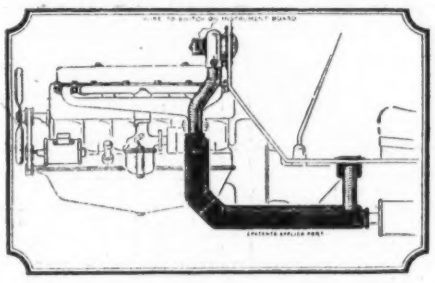


A-30 Model A Ford

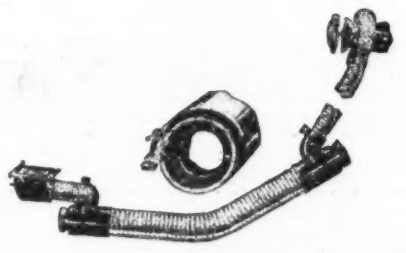
A SIMPLIFIED layout of popular-priced heaters providing complete coverage, is the central idea about which the Cooper line is built, according to H. M. Cooper, secretary and treasurer of Cooper Manufacturing Company, Marshalltown, Ia.

This season sees the addition of three electric blower type heaters with the same coverage that has always characterized Cooper heaters.

The additions are A-30 Model A Ford, blower type heater, $17.50; C-30 Chevrolet 6, blower type heater, $18.50; FJ-1-B Flexo Universal, blower type heater, $20.



C-30 Chevrolet Six



FJ-1-B Flexo Universal

Wholesale Brevities

Rochester, N. Y., Sept. 23.—Charles S. Owen, president of the Chapin-Owen Company, Inc., automotive equipment jobber, will dispose of his holdings in the concern and retire, he announced here today. Owen and Charles T. Chapin organized the business in 1915, with Owen as president and Chapin as chairman of the board. Chapin retired two years ago.

New Haven, Conn., Sept. 23.—Louis H. Weiner, Inc., automotive jobbing concern of 318 Crown St., has added a line of Perfect Circle piston rings to his stock.

Montgomery, Ala., Sept. 23. (UTPS).—The Alabama Machinery and Supply Company has been appointed distributor in this vicinity for Pennzoil motor oil. The company also maintains stores at Dothan and Selma, Ala.

Trenton, N. J., Sept. 23.—Members of the Sales and Advertising Managers Group, Manufacturers' Council, Chamber of Commerce, participated in a luncheon gathering at the Stacy-Trent. "Our Economic Structure and Its Advantages to Salesmen" was the general subject for discussion. T. S. Cart was in charge of the program. R. T. Bowman, chairman of the group, presided. William Robinson gave a report of Trenton's exhibit at the American Fair, Atlantic City.

Men in Attendance at The Metal Congress

(Continued from Page 5)

Tool Company, Chicago. Booth 10-L. Harold C. Smith, president; F. W. England, vice-president; C. L. Johnson, treasurer; P. J. Nelson, sales manager, Illinois, tools; J. M. Gribbie, sales manager Shakeproof washers; C. J. Irwin, superintendent; S. O. Bjornberg, consulting engineer; A. W. Swanson, R. P. Leiner, J. LaBuda, E. E. Valy, F. W. Dority, William Holly, A. W. Long, W. V. Klimmer.

International Nickel Company, Inc., New York. Booth 10-D. T. H. Wickenden, C. McNight, A. L. Roberts, F. B. Coyle, J. S. Vanick, A. G. Zima, H. J. French, J. W. Sands, R. L. Suhl, R. Cooper, Jr., W. C. Kerrigan, R. A. Wheeler, H. S. Lewis, E. J. Bothwell, F. H. Villaume.

Iron Age Publishing Company, New York. Booth 2-B. F. J. Frank, president; W. W. Macon, editor; G. L. Lacher, managing editor; C. G. Wright, news editor; E. F. Cone, associate editor; S. G. Koon, associate editor; R. E. Miller, editorial staff; R. A. Fiske, Chicago editor; F. L. Prentiss, Cleveland editor; Burnham Finney, Detroit editor; T. H. Gerken, Pittsburgh editor; C. S. Baur, general advertising manager; H. E. Leonard, advertising department; Oliver Johnson, advertising department; B. H. Hayes, advertising department; F. S. Wayne, Western representative; W. B. Robinson, Pittsburgh representative; Emerson Findley, Central Western representative; Charles Lundberg, Philadelphia representative; B. L. Herman, western New York state representative; Peirce Lewis, Detroit and Cincinnati representative; D. C. Warren, New England representative; W. C. Sweetser, New Jersey representative; C. H. Ober, New York representative; A. H. Dix, subscription manager.

Ivins' Steel Tube Works, Ellwood, Philadelphia. Booth 36-D. Ellwood Ivins, president; Horace S. Kircher, vice-president; J. B. Cording, treasurer; Stanley Jeffries, metallurgist.

Jessop Steel Company, Washington, Pa. Booth 47-B.

Jessop Steel Company, Washington, Pa. Booth 47-B. S. A. Grayson, president; R. E. Emery, vice-president; F. T. H. Youngman, secretary and treasurer; R. J. Murray, 2d, assistant secretary; R. E. Malmberg, metallurgist. District Sales Managers: A. C. Graham, Chicago; D. J. Hanna, Detroit; V. M. Wellman, Cleveland; R. M. Paxton, Jr., New York; A. W. Lucas, Hartford. District Representatives: W. J. Frederick, Cincinnati; M. W. Singer, Boston; J. S. Marlowe, Indianapolis; J. C. Dawson, A. G. Lambert, Toronto.

Jones & Laughlin Steel Corp., Chicago. Booth 3-L.

K. G. Welding and Cutting Company, Inc., New York. Booth 104. W. D. Flannery, vice-president; A. W. Carr, F. O. Weber, H. H. Kress.

Keller Mechanical Engineering Corporation, Brooklyn. Booth 8-A. H. P. Loewenberg, P. C. Renno, W. M. Rieman, J. J. Walsh.

Kelley Company, J. W., Cleveland. Booth 12-D. J. W. Kelley, president; J. E. Burns, vice-president; H. B. Northup, secretary; C. F. Boyd, H. M. Webb, E. C. Redlin, B. O. Platell, sales representatives.

Kelley-Koett Manufacturing Company, Inc., Covington, Ky. Booth 8-F. J. R. Kelley, president; W. S. Werner, chief electrical engineer and secretary; C. A. Poole, industrial research engineer; E. B. Graves, electrical engineer; G. M. McFedries, manager of Chicago branch.

Kemp Manufacturing Company, C. M., Baltimore. Booth, Gas Section. E. B. Dunkak, William Hunt, W. S. Bassett and F. H. Andrews.

Kenworthy, Inc., Charles F., Waterbury, Conn. Booth 28-D.

Kinite Corporation, Milwaukee. Booth 3-B.

Kleist, Charles & Son, Jamestown, N. Y. Booth 24-D. H. E. Kleist, sales manager.

Kloster Steel Corporation, Chicago. Booth 21-Ba. Einar Lindeblad, general manager; Max Weisner, sales representative.

Leeds & Northrup Company, Philadelphia. Booth 5, G. W. Tall, sales manager pyrometer division; A. E. Tarr, Jordan Korp, E. H. Carlson, W. A. Lane, T. C. Smith, J. A. Dow, H. F. Coyle, E. Bentsen, C. O. Anderson, H. Brewer, sales manager furnace division; E. B. Estabrook, P. H. Taylor, A. F. Moranty, O. Brewer, E. C. Wahl, W. D. Trueblood, R. E. Hansen, T. C. Bennett and M. B. Fisher.

Leitz, Inc., E., New York. Booth 1-L. R. Tvestmann, factory superintendent; O. Soetbeer, technical representative; A. I. Buehler, Chicago representative.

Lincoln Electric Company, Cleveland. Booth 90. A. F. Davis, vice-president; R. A. Davidson, district manager, Chicago; H. M. Downing, F. O. Erickson, John C. Ardagh, H. F. Nye and A. E. York.

Lindberg Steel Treating Company, Chicago. Booth 16-D. A. N. Lindberg, president; L. A. Lindberg, vice-president and works manager; E. C. Kohler, treasurer; P. J. Norton, metallurgist; H. E. Lindberg, esti-

(Continued on Page 10)

OAKLAND-PONTIAC SALES UP SHARPLY

Pontiac, Mich., Sept. 23.—During the first ten days of September, new car sales by Oakland-Pontiac dealers throughout the United States increased 51 per cent. over sales during the corresponding period of August, while used car sales improved 9 per cent.

All of the five major geographical regions of the United States contribute toward the latest improvement in Oakland-Pontiac new car sales for the first ten-day period of September, while three of the five regions report increased used car sales, two showing slight decreases.

Following are the sales figures by regions showing the percentage of increase or decrease registered in the first ten-day period of September, as compared with the first ten days of August:—

	Per cent. New	Per cent. Used
Central West	168.48	— 2.79
Great Lakes	54.97	— 3.15
Southwest	51.00	29.07
Pacific Coast	43.75	35.07
East	26.47	9.98

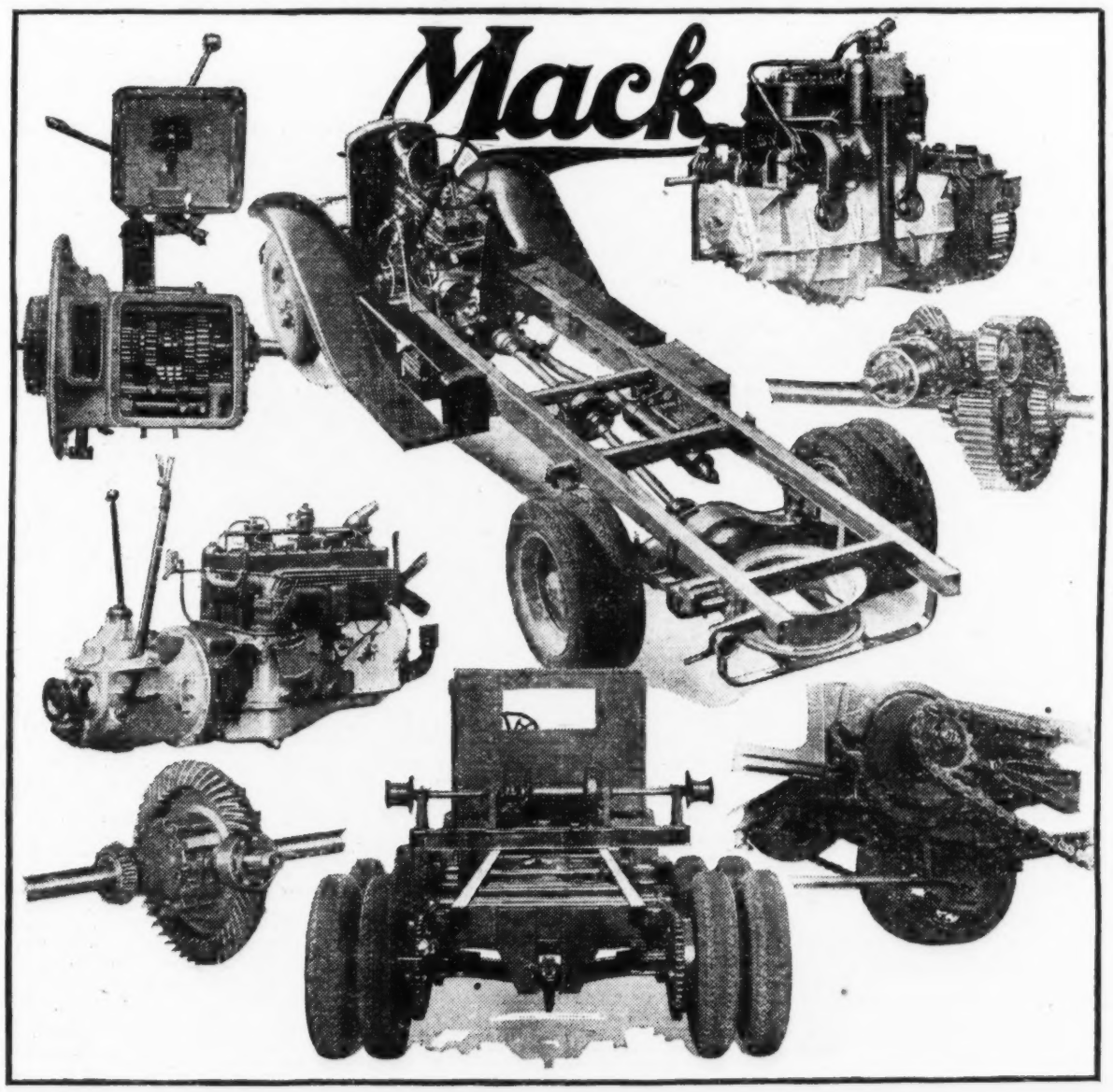
18,000 BACK TO WORK IN CAMDEN, N. J., PLANT

Camden, N. J., Sept. 23.—The "Back to Work" celebration staged in Camden Saturday with 18,000 employees of the Radio Corporation of America parading, was featured by a souvenir booklet in which leading manufacturers of automotive parts, accessories, and equipment took space to compliment R. C. A. Victor on its leadership. The majority of the concerns make parts for the radio industry as well as for the automotive industry. They point out that the move on the part of R. C. A. will enable them and many other concerns to "get back to work" as well.

Among the automotive concerns who commended Victor were: The Electric Storage Battery Company, Philadelphia; Public Service Co-ordinated Transport, Newark; the Avery Drilling Machine Company, Cincinnati; Philadelphia Gear Works, Philadelphia; the Materials Handling Equipment Company, Philadelphia; National Twist Drill and Tool Company, Detroit; Westinghouse Electric Company, Schenectady; Superior Steel Corporation, Pittsburgh; General Cable Corporation, New York; Gilby Wire Company, Newark; Brown & Sharpe, Providence; Kellogg Switchboard and Supply Company, Chicago; Crescent Insulated Wire and Cable Company, Trenton; Weston Electric Instrument Corporation, Newark; the Trailmobile Company, Cincinnati; the Carborundum Company, Niagara Falls; the Positive Lock Washer Company, Newark; the National Lock Washer Company, Newark; United States Tool Company, Inc., Ampere, N. J.; the E. J. Manville Machine Company, Waterbury, Conn.

BALTIMORE SECTION S. A. E. STARTS 1930-31 SEASON

Baltimore, Sept. 23.—The Baltimore section of the Society of Automotive Engineers has announced the first of a series of monthly meetings to be held during the 1930-31 season. This meeting will be held on September 24 at the Automobile Trade Association of Maryland offices. The subject under discussion will be "Engine Lubrication," presented by A. F. Masury, vice-president and chief engineer International Motor Company, New York city.



MACK MEETS SPECIFIC NEEDS WITH STANDARD MACK-BUILT UNITS . . . .

Different load and road conditions require different types of final drives . . . different powering . . . different chassis weights . . . different wheelbase lengths . . . different transmissions . . . different body designs . . . but Mack meets your specific needs with the most comprehensive line of one- to ten-ton chassis, four- or six-cylinder engines, four or six wheels, transmissions, final drives, cabs and bodies, ever offered under one trade-mark.

MACK TRUCKS, Inc.
25 Broadway New York, N. Y.

More than 100 Direct Mack Factory Branches operate under the titles of "MACK-INTERNATIONAL MOTOR TRUCK CORP.," "MACK MOTOR TRUCK CO." or "MACK TRUCKS OF CANADA, LTD."

The remarkable adaptability of the comprehensive Mack line means a wider market than ever before for Mack quality. The bigger profits that naturally result from handling a quality product make the Mack Dealer Franchise an attractive proposition. Let us send you full information.

TRUCKS • BUSES • FIRE APPARATUS • LOCOMOTIVES

Production--Engineering--Factory-

Corrosion and Heat Resistant Nickel-Copper-Chromium Cast Iron Alloy

(Continued from Page 7)

and summaries of a few typical corrosion tests, comparing the properties of this iron with plain iron, follow:

Type of Corrosive Atmosphere	Weight Loss in M G Per Sq. Dm. Per Day: Corrosion Resistance Cast Iron	Plain Cast Iron
	Rusts Superficially	Rusts Readily
Atmosphere after 30 days	9.5	59.7
Atmosphere after 90 days	7.9	63.5
Atmosphere after 1½ years	3 to 4	30 to 40
Water Spray (Vertical)	6.6	207.5
Water Spray (Horizontal)	17.6	244.0
Aerated Tap Water Immersion	7.8	67.2
3% Aerated Sodium Chloride	50	190
12½% Fermented Molasses Solution (after 120 days)	10	360
CO_2—Sat'd* Hot Tap Water—95 degrees C.	110	660
Ferric Sulfate	17,000	32,000
5% Aerated Sulphuric Acid	350	30,000
5% Aerated Hydrochloric Acid	507	26,665
10% Aerated Hydrochloric Acid	598	29,475
20% Aerated Hydrochloric Acid	1,111	33,270
Hot Caustic (from evaporator concentrating to 100-130 TW for 54 days)	30	430

*Corresponding to bad boiler water.

Additional test data have been published in a paper by Dr. M. Marcel Ballay, who had studied the material independently some time after many of our corrosion tests had been completed.

These test results have suggested the use of the corrosion resistant cast iron in practically every service requiring a better performance than plain cast iron offers, and in some instances, the results are better than those obtained from nonferrous alloys, such as the brasses and bronzes, and in many cases, the iron can be substituted for such material, usually at a lower cost. Its resistance to attack by relatively strong acids, as well as its low corrosion rate in caustics, organic acids, weak corrosives, such as tap water, and the atmosphere, have brought it into a wide variety of industrial applications, as well as everyday uses.

Machinability

The alloyed iron if produced to the standard specification of 14 per cent. nickel, 6 per cent. copper, 2 per cent. chromium, possesses not only the physical properties common to ordinary cast iron, but also the machinability. If the composition is hardened by chromium additions, above 3 per cent., as mentioned above, its machining speed will greatly decrease. Hardening the iron in this way may reduce the speed to as low as one-half of that of soft gray iron. The much greater toughness of the alloyed cast iron requires that it be made softer by some 30 to 40 Brinell units to have it machine at approximately the same rate as a corresponding plain gray iron.

Thermal Expansion

The coefficient of thermal expansion for temperatures up to 600 degrees Centigrade is 50 per cent. greater than that of plain cast iron and, therefore, similar to that of bronze. This factor has been useful in development work in connection with its use as a sleeve in automotive, aero and marine engines, in conjunction with aluminum alloy pistons. Since aluminum possesses a high coefficient of expansion, some rather complicated piston designs have been necessary to produce a casting which would possess an expansion comparable to that of plain cast iron. By producing an aluminum alloy which expanded at about the same rate as this high-expansion cast iron alloy, a combination was developed which would operate together successfuly when heated. A number of engines developed along these lines in an experimental way have performed successfully and indicate the possibilities for the trend of engine manufacture in this direction.

Heat Resistance

The large amount of nickel and chromium which are present in the cast iron composition would indicate immediately that it is suitable for service at elevated temperatures. The resistance to oxidation of the ordinary composition is quite marked at temperatures in the range of 12-1500 degrees Fahrenheit, and may reach a value of ten to twelve times more resistant to oxide formation than plain cast iron in an oxidizing atmosphere. As the temperature increases, this degree of improvement diminishes until at temperatures in the range of 1600-1700 degrees Fahrenheit, the difference is considerably reduced. A curve illustrating the resistance to oxidation of a plain iron and an iron of this type is shown in Fig. 2.

A most important asset along with the resistance to oxidation is the fact that the iron is comparatively free from growth. Since the alloyed iron is austenitic in its character, and does not go through a transformation on heating and cooling with the accompanying dimensional changes, it is not so susceptible to growth as plain cast iron. Fig. 2 illustrates the difference in growth resistance between a plain cast iron and an alloyed iron of this type in an atmosphere of carbon dioxide. Further importance is atached to the fact that the resistance to growth prevails in either oxidizing or reducing gases of which carbon monoxide, carbon dioxide, steam, illuminating gas, and muffle gases, are examples.

This resistance to growth and corrosion combined with the gray iron nature of the material, may be utilized in corrosion resisting service and furthermore to obtain freedom from sticking, in metal to metal contacts.

The resistance to corrosives such as salt baths, hydrogen sulphide and other forms of oxidation or chemical attack, are indicated in the following table:

Corrosion plain vs. Corrosion-resistant cast iron in hot salt or gases

	H₂S at 205°F.	1500°F. Liquid Salt in 240 Hours	Scale Formed	1500°F. Growth after 240 Hours Heating
Corrosion—				
Resistant C. I.	58.5 (x) (a)	509 (x)	9,000 (a)	2-6% by volume (a)
Plain C. I.	319 (x)	1620 (x)	92,000	25-30% by volume (a)

(x) Wt. loss in mg. per sq. dm. per day after removing adherent corrosion products.
(a) Contained 3½% Chromium.

These results indicate a substantial resistance to chemical attack at moderately high temperatures (not over 1,500 degrees Fahr.).

Sulphur compounds and scale form less readily upon the alloyed iron and penetrate less deeply than they do in plain iron. These properties make it useful for such parts as pumps, valves, pipe, fittings, vats, pots, fans, blowers, condensers, chemical ware, and similar castings subjected to high temperature and corrosive vapors.

The strength of an iron, of this type at elevated temperatures is illustrated in Fig. 3. These results have been obtained in short-time tests and indicate the usual decrease in strength as temperatures exceed 900 degrees Fahr. However, the strength loss is less than that for plain cast iron. Analyses of test barss submitted to long period of heating, have shown that the combined carbon content remains unaffected throughout the period of heating, so that the tendency toward graphitization and strength loss which is so common in plain cast iron is not as readily developed in this alloyed type. Thus the load carrying capacity at elevated temperatures is better maintained and the rapid deterioration caused by repeated heating and cooling does not occur. This thermal stability has been responsible for several of its current uses.

Magnetic and Electrical Properties

The alloy (of normal composition) is nonmagnetic and has a high electrical resistivity (1¼ per cent. of copper conductivity). Its character with respect to electrical properties is essentially that of the austenitic,

(Continued on Page 12)

HEAT RESISTING CAST IRON

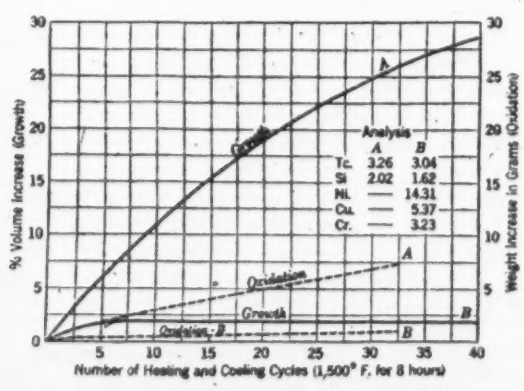


Fig. 3—Typical Curves of Oxidation and Growth of Plain Cast Iron (A) and Corrosion Resisting Cast Iron (B) at 1500 Degrees Fahr.

Men in Attendance at The Metal Congress

(Continued from Page 9)

mating engineer; B. C. Cleveland, sales manager.

Linde Air Products, New York. Booth 82.

Ludlum Steel Company, Watervliet and Dunkirk. Booth 7-B. A. F. Dohn, vice-president and general manager of sales; C. B. Templeton, assistant to president; F. B. Lounsberry, vice-president and manager Dunkirk plant; Harry Hardwicke, Chicago district sales manager; W. G. Zetsche, Edwin Oerser, R. E. Surtees, salesmen; and W. H. Wills, metallurgist Dunkirk plant.

Madison-Kipp Corporation, Madison, Wisconsin. Booth 1. A. T. Lillegren, sales manager; T. E. Coleman, president; J. A. Coleman, vice-president; J. A. Courter, eastern sales manager; A. S. Kidd, superintendent; T. C. Korsmo, chief engineer die casting division; F. R. Clark, chief draftsman; R. Schultz, die casting machine expert.

Maehler Co., Paul, Chicago. Gas Section.

Mahr Manufacturing Company, Minneapolis, Minn. Booth 60. W. G. Barstow, vice-president; C. F. Olmstead, assistant sales manager; B. G. Harmon, Chicago branch manager; C. W. Rudolph, Chicago district representative; A. E. Stenzel, Detroit district representative; and A. F. Tenney, Ohio district representative.

Marburg Brothers, New York. Booth 21. Theodore H. Marburg, president; O. P. Brett, Richard Krause and F. Wenzel.

Maxon Premix Burner Company, Muncie. Gas Section.

McGraw-Hill Publishing Company, New York. Booth 15-F. W. E. Kennedy, manager; L. E. LeGrand, assistant editor; K. H. Condit, editor and publishing director; W. E. Irish, Ray Deen, Miss Annie LiSota, W. H. Shipman, O. Loughlin and H. C. Stephenson.

Metal & Thermit Corporation, Chicago. Booth 101.

Michiana Products Corporation, Chrobaltic Division, Michigan City, Ind. Booth 36-B. W. B. Sullivan, vice-president and general manager; H. Klouman, superintendent; L. H. Whiteside, Chicago representative; A. A. Cash, Detroit branch; J. F. Sweeney, New York; C. M. Conner, Philadelphia; E. E. Whiteside, Cleveland; J. W. Mull, Jr., Indianapolis.

Michigan Steel Casting Company, Detroit. Booth 3. F. J. Stanley, secretary and general manager; E. D. Flinterman, sales manager; J. D. Corfield, sales engineer; Ralph T. Crean, Chicago representative; W. E. McGahey, sales representative.

Midvale Company, Philadelphia. Booth 22-B. Dr. H. L. Frevert, vice-president in charge of operations; Stuart Hazlewood, vice-president in charge of sales; Henry Ziesing, manager of sales. Francis B. Foley, research engineer; Howard Myers, engineer of tests; A. Hamilton, engineer heat and corrosion resisting castings; H. E. Rowe, manager bar steel sales; Frank Sleath, service department; Fred Sager, manager of sales, Chicago; W. B. Smyth, manager of sales Cleveland; Le Roy Berkey, Cincinnati; T. G. Besom, New York; J. R. Adams, superintendent special products.

Milburn Co., Alexander, Baltimore. Gas Section.

Mill and Factory Illustrated, New York. Booth 12-F. Harvey Conover, president; B. P. Mast, vice-president, and R. A. Conover.

Milne & Co., A., New York Booth 5-B. Henry Sears Hoyt, member of the firm; V. A. Greene, general sales manager; H. R. Adams, manager Chicago branch; W. McIlwrath; and Miss M. Trusten.

Minneapolis-Honeywell Regulator Company, Minneapolis. Booth 1-B. R. L. Goetzenberger, manager industrial regulator department; W. G. Jennings, manager Chicago office; R. G. Taylor, industrial sales engineer, Chicago; J. E. Kelly, industrial sales engineer, Detroit; L. H. Plum, industrial sales engineer, Philadelphia; J. E. Haines, industrial sales engineer, New York; J. S. Gaines, industrial sales engineer, Milwaukee; and Paul F. Shivers, engineer, research and development.

Modern Engineering Company, St. Louis. Booth 107. A. J. Fausek, president; I. F. Fausek, general sales manager; John J. Keane, territorial sales manager; Walter Smith, Chicago representative, and W. J. Lacey, merchandise manager.

Molybdenum Corporation of America, Pittsburgh. Booth 8-L.

Morse Twist Drill and Machine Company, New Bedford, Mass. Booth 31-B. W. T. Read, vice-president and treasurer; F. O. Lincoln, vice-president in charge of sales; J. Gordon Barr and B. F. Mansur.

New Jersey Zinc Company, New York. Booth 1. F. C. Fuller, manager of metal and chemical division; W. P. Hardenbergh, Jr., assistant manager metal and chemical division; R. M. Neumann, Western sales manager; J. W. Matthias, assistant Western sales manager; R. M. Curts, S. E. Maxon, C. R. Maxon, R. Davison and R. L. Davis.

Northwestern Manufacturing Company, Milwaukee. Booth 93.

Norton Company, Worcester, Mass. Booth 6. H. K. Clark, district manager (wheel division); R. W. Cornish, sales representative (wheel); K. H. Bird, W. H. Henson, refractories sales representatives; F. H. Stenberg, publicity department, Worcester.

Ohio Steel Foundry Company, Springfield, O. Booth 26-B. W. J. Gilmore, vice-president; F. K. Ziegler, manager alloy division; J. F. Monfils, sales manager alloy division; D. W. Talbott, W. A. Toohill and Frank Morrow, sales engineers.

Olsen Testing Machine Company, Tinius, Philadelphia. Booth 25-B. R. B. Lewis, H. H. Gildner, Bruce L. Lewis and J. Millane.

Page Steel and Wire Company, Bridgeport. Booth 78.

Park Chemical Company, Detroit. Booth 4-B. J. N. Bourg, vice-president and general manager; F. W. Faery, Jr., and J. C. Thompson, sales representatives.

Pels & Co., Inc., Henry, N. Y. Booth 20.

Penton Publishing Company, Cleveland. Booth 25-D.

Permutit Co., New York. Booth 2.

Pittsburgh Instrument and Machine Company, Pittsburgh. Booth 24. Paul Kammerer and Charles Trueg.

Pressed Steel Company, Wilkes-Barre, Pa. Booth 44-B. Chas. B. D. Wood, president; J. H. Mac Veigh, vice-president and sales manager; and F. A. Schmidt, works manager.

Production Machine Co., Greenfield. Booth 73.

Reeves Pulley Company, Columbus, Ind. Booth 8-A. C. L. Irwin; A. E. Shibley, manager Chicago branch office; C. M. Reeves, vice-president; F. T. Moore, H. M. Glessner and E. C. Schrade.

Reintjes Co., George P., Kansas City, Mo. Booth 32.

Republic Flow Meters Company, Chicago. Booth 14-B. George S. Hendrickson, sales manager; George D. Conlee, chief engineer; Albert

(Continued on Page 11)

QUIGLEY MARKETS NEW SEALING COMPOUND

Through the use of a newly discovered micaceous mineral which expands several times its own volume when subjected to heat, the Quigley Company, Inc., New York city, has developed Q-Seal, a plastic expansive joint sealing compound.

It is a natural lubricant and preserver of metal and is impervious to steam, gas, gasoline, kerosene, oils, acids, ammonia, brine, creosote, etc., according to the manufacturers.

Due to its expansive feature, it is stated that it will fill any imperfections in gaskets, threads or metallic surfaces. It prevents corrosion or oxidation. It withstands high pressures and temperatures, remains plastic and is unaffected by vibration.

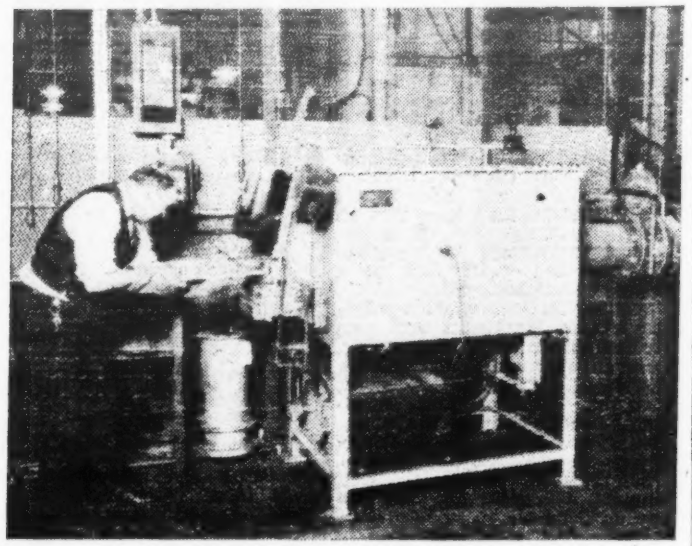
On automobile and other internal combustion engines this product is used for sealing cylinder heads, manifolds, oil pan differential and transmission housing gaskets, leaky spark plugs, carburetor, vacuum tanks and gasoline connections. It can also be used on battery connections to prevent sulphation.

C. A. McCUNE NOW WITH RESEARCH CORPORATION

Bridgeport, Conn., Sept. 23.—C. A. McCune, former director of research for the American Chain Company, has been named for the same position with the Welding, Engineering and Research Corporation of New York: The New York concern has recently been reorganized.

Equipment - - - Development

High Temperature Furnace With Reducing Atmosphere



G. E. 10-kilowatt, 220-volt hydrogen electric furnace

THE General Electric Company announces a production-type furnace suitable for temperatures up to 2,600 degrees F., as an addition to its line of heat-treating equipment. This type of furnace is applicable for many processes, especially those that must be carried on in a reducing atmosphere, such as copper brazing, the manufacture of carboloy, on the brazing of carboloy tips to steel.

The heating element consists of molybdenum wire and operates in a hydrogen atmosphere. The hydrogen prevents both the moylbdenum wire and the charge from becoming oxidized.

The door is manually operated. This is to prevent oxygen from getting into the furnace and oxidizing the heating units or the work. The door, which is of cast iron, slides on an inclined casting. Thus the weight of the door when closed forms a seal against the escape of hydrogen and excludes air from the furnace.

Work is pushed from the furnace into the cooling chamber, where it is allowed to cool in a hydrogen atmosphere. There are two cooling chambers, the second one being equipped with a water jacket which allows the work to cool below oxidizing temperature before it is removed. The production of the cooling chamber is equal to that of the furnace.

A refractory door between the furnace and the cooling chamber prevents an excessive loss of heat.

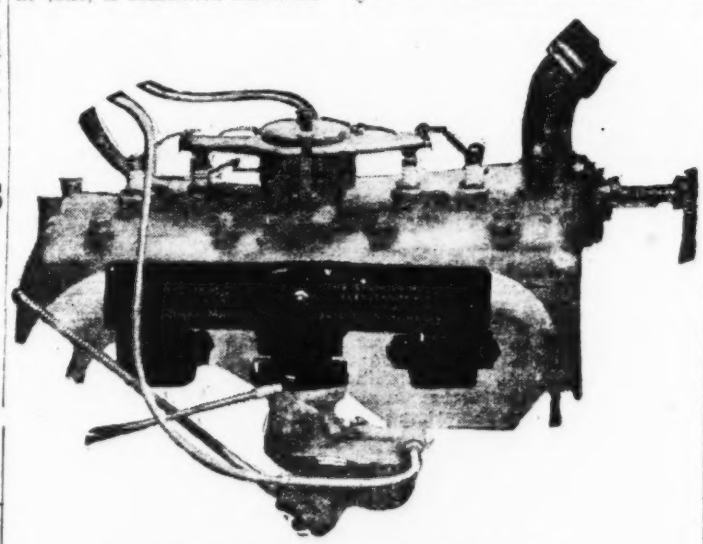
Some of its interesting points are as follow:

1. Rating—Ten kilowatts, 220 volts, single phase.
2. Heating chamber dimensions—2½ feet long by 4 inches high by 6 inches wide.
3. Overall dimensions—5 feet 4 inches high by 6 feet long by 2 feet 10 inches wide.
4. The heating elements are easily replaced in case of burnouts.
5. Low gas consumption, about 30 cubic feet per hour.
6. Low radiation losses, about 6 kilowatts per hour at 2,200 degrees Fahrenheit.
7. Good heat distribution throughout the furnace.
8. Automatic temperature control.

NEW SWAN MANIFOLD FOR MODEL A FORD

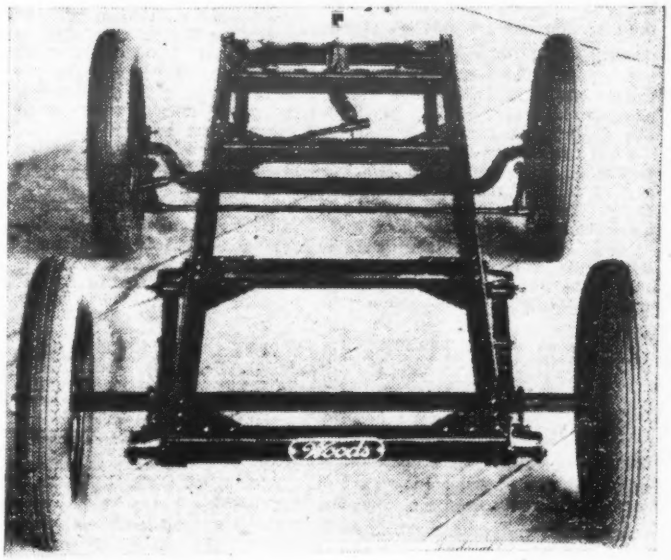
Especially designed for Model A Ford cars, the Simmons Swan manifold provides the high efficiency of fuel distribution that gives extra power, smoothness of operation and greater flexibility to motors in high priced cars, according to the manufacturers, the Simmons Manufacturing Company, Cleveland, O.

The new manifold, which lists at $3.50, is illustrated herewith.



SIMMONS Swan manifold for the Model A Ford

NEW TRAILER ADDED TO PATRIOT LINE



THE Patriot Manufacturing Company, builders of Woods motor trucks and Patriot commercial bodies, and a division of the Arrow Aircraft and Motors Corporation, Lincoln, Neb., have added a light commercial four-wheel trailer to their line of products. It will be known as the Woods Trailer and will retail for less than $200.

The trailer can be furnished chasis only, or with any type of body desired, such as combination stock and grain rack; express, open or closed, with or without screen sides; or 300-gallon compartment tank. It is suitable for general farm or utility purposes, camp trailers, etc., and can be easily pulled by passenger cars or light trucks. The trailer is also furnished with reversible pitch at slight increased cost.

The frame is made of pressed steel rails with five cross members all well riveted and held with gusset plates. The rails are 9 feet long and 32 inches in width, suitable for mounting a wagon box. The front axle is I-beam type; rear axle, 1½ inches cold rolled steel. The track, front and rear, is 55 13-16 inches.

Wheels are of wood (second growth hickory) with large flat, oval spokes. Rims are demountable—19x4 inch collapsible type, easy to dismount. Spare rim is furnished. Timken taper roller bearings are used in all wheel hubs. There are four semi-elliptic springs, chrome manganese steel, 34 inches long, 1¾ inches wide, with seven leaves, allowing 600 pounds per inch deflection per spring. All castings are malleable. Tires are standard 5.00-19 balloons, while larger sizes can be furnished extra. Lubrication is entirely through Alemite fittings.

Steering is by means of a divided type front axle through a drag link from end of "hitch." Pull of the trailer is direct to the frame and not to the front axle, giving more strength and better control of front wheels.

GUIDE LAMP CO. TO BUILD 20,000 HEADLIGHTS DAILY

Anderson, Ind., Sept. 23.—F. S. Kimmerling, president and general manager of the Guide Lamp Company, announced that with completion of the removal of machinery from the Cleveland plant to this city, the local factory, recently enlarged, is prepared to build 20,000 automobile headlights daily, with prospects of gradual increases in employment. Several executives and department heads from Cleveland moved here in the consolidation.

Men in Attendance at The Metal Congress

(Continued from page 10)

Spitzglass, experimental engineer; E. Schneider, S. C. Vail, W. L. Eckdahl and T. E. Bell.

Republic Steel Corporation, Massillon, O. Booth 16-B.

Riehle Bros. Testing Machine Co., Philadelphia. Booth 1-F.

Roebling's Sons, John A., Company, Trenton, N. J. Booth 102.

Roessler & Hasslacher Chemical Company, New York. Booth 11-B. Walter M. Gager, metallurgist in charge; Charles H. Proctor, electroplating expert; D. A. Holt, chemist; A. C. Stepan, sales manager Chicago office; W. Nissen and A. Papp, Chicago.

Rustless Iron Corporation of America, New York. Booth 21-D.

Ryan, Scully & Co., Philadelphia. Gas Section.

Ryerson Company, Joseph T., Chicago. Booth 7-D.

Scherr Company, Inc., George, New York. Booth 14-L. George Scherr, Fritz Konig and R. P. Friis.

Selas Company, Philadelphia. Booth, Gas Section. F. Hess, manager.

Shakeproof Lock Washer Company, Chicago. Booth 10-L. See Illinois Tool Works.

Shore Instrument & Manufacturing Company, Jamaica, N. Y. Booth 14-D. F. G. Kendall, sales manager; B. C. Cleveland, central Western representative.

Southern Manganese Steel Company, St. Louis. Booth 28.

Southwark Foundry & Machine Company, Philadelphia. Booth 41-B.

Spencer Turbine Company, Hartford. Booth 75. A. W. Peard, Western manager; F. A. Wright, special representative; R. A. Brackett, sales department.

Standard Alloy Company, Inc., Cleveland. Booth 30-D. Harvey M. Smith, sales manager; Frank F. Jackson, superintendent; Emerson M. Williams, secretary; W. D. Mann, manager Providence office; George S. McFarland, Columbus office; A. D. Darragh, New York representative; Wm. M. Titzel, Chicago representative; and Wharton L. Peters, St. Louis representative.

Steel City Testing Laboratory, Detroit. Booth 41-B.

Steel Publications, Inc., Pittsburgh. Booth 99. D. N. Watkins, president; D. S. Watkins, vice-president; M. M. Zeder, secretary and treasurer; Chas. Longenecker, managing editor; L. R. Gurley, editor, **Welding**; G. H. Haynes, business manager, **Heat Treating and Forging**; G. P. Grant, western manager; R. E. Powell, eastern manager; and H. D. Brewer, circulation representative.

Stoody Company, Whittier, Cal. Booth 103. Miles C. Smith, manager sales promotion; J. C. Blake, general sales manager; C. E. Phillips, president of C. E. Phillips & Co., Detroit and Chicago, and C. P. Konton, Chicago, representative C. E. Phillips & Co.

Strong, Carlisle & Hammond Company, Cleveland. Booth 34. R. P. Bethke, A. B. Lindsay, Jacob Weintz, F. C. Parsons, sales engineers; Chas. Klaue, sales representative; Fred Leopold, furnace operator; G. S. Peterson, manager furnace department.

Stuart & Co., D. A., Chicago. Booth 4-D.

Surface Combustion Company, Inc., Toledo. Gas Section.

Taylor-Winfield Corporation, Warren, O. Booth 94. J. A. Anderson, president Denton & Anderson Company; W. A. Anderson, vice-president in charge of sales of the Denton & Anderson Company; George E. King, manager of Chicago district office Denton & Anderson Company; C. T. Marsh, service engineer; C. A. Gould and C. G. Bassler.

Thomson-Gibb Electric Welding Company, Lynn, Mass., and Bay City, Mich. Booth 97. W. H. Gibb, vice-president; C. E. Shearer, assistant to vice-president; C. O. Watson, manager Chicago district office; R. B. Strout, Chicago district office; R. L. Browne, manager Albany district office; A. E. Hackett, manager Detroit district office; D. A. Clements, St. Louis district office; P. B. Hall, Indianapolis representative; C. K. Stone, Minneapolis representative; G. K. McMullen, Grand Rapids representative.

Timken Steel and Tube Company, Canton, O. Booth 1-D. M. T. Lothrop, president; J. W. Spray, vice-president; A. J. Sanford, vice-president in charge of sales; E. F. Talmadge, Chicago office; Robert Atkinson, Detroit office; S. D. Williams, Canton office; W. G. Hildorf, metallurgist.

Trent Company, Harold E., Philadelphia. Booth 36.

Una Welding and Bonding Company, Cleveland. Booth 105. E. W. Kronbach, A. A. Probeck, L. R. Berkley, L. S. Burgett and J. B. Austin.

Vanadium-Alloys Steel Company, Latrobe, Pa. Booth 24-B.

Vanadium Corporation of America, New York. Booth 9-F. B. D. Saklatwalla, vice-president; G. L. Norris, chief metallurgical engineer; H. T. Chandler, assistant to the president; Jerome Strauss, chief research engineer; J. A. Miller, general manager of sales; C. B. Woodworth, manager Western division; Walter Smith, assistant manager Western division; C. N. Dawe, manager automobile division; T. Bourke, assistant manager automobile division; A. W. Demmler, metallurgist.

Vulcan Crucible Steel Company, Aliquippa, Pa. Booth 10-B. S. G. Stafford, president; R. M. Kelso, A. D. Beeken, Jr.; S. B. Minton, E. H. Lurker, Chicago branch manager; O. H. Beall, Chicago, and E. V. Hobson, Chicago.

Weaver Brothers Company, Adrian, Mich. Booth 29-B. J. C. Weaver, vice-president; D. E. Stamm, chemist; H. E. Rose, secretary.

Wedge Lock Tool Company, Chicago. Booth 10-L. See Illinois Tool Works.

Welding Engineer Publishing Company, Chicago. Booth 72. H. S. Card, editor; F. L. Spangler, associate editor; L. C. Monroe, central states representative; and T. E. DePew, eastern manager.

Wheeling Mold and Foundry Company, Wheeling. Booth 61.

Wheelock, Lovejoy & Co., Inc., Cambridge, Mass. Booth 8-D. A. O. Fulton, president; F. H. Lovejoy, vice-president; S. W. Parker, Chicago manager; A. R. Townsend, F. J. DeVan, and H. A. Bischoff, Chicago sales organization.

Westinghouse Electric and Manufacturing Company, East Pittsburgh. Booth 76. W. W. Reddie, section head arc welding sales; W. C. Pearson, welding specialist; northwestern district; G. H. Koch, welding engineer; T. C. Kelley, section head industrial heating, Mansfield; C. W. Babcock, Boston; H. C. Bostwick, New York; J. W. Allison, Philadelphia; J. F. Baker, Pittsburgh; T. J. James, Cleveland; W. C. Stevens, Detroit; J. Mixsell, J. H. Germany, M. S. Boreen, J. C. Woodson, C. H. Carpenter, R. H. Allen, W. Roth, O. A. Colby, F. Kerin, of Mansfield.

Whitman & Barnes, Inc., Detroit. Booth 4. E. D. Wolf, assistant sales manager; R. O. McGraw, assistant sales manager; F. T. Harrington, chief engineer; W. R. Breeler, metallurgist; M. J. Kearins, manager Chicago office; H. D. Strelluf, salesman.

Wickwire-Spencer Steel Company, New York. Booth 74. M. G. Werme, O. C. Ploss, V. C. King, E. F. Early, R. R. Tatnall, F. J. Connor, J. R. Worsfold, sales manager; F. W. Hale, department sales manager; C. R. Coffeen and M. A. Bloomquist.

Young Brothers Company, Detroit. Booth, Gas Section. R. B. Reed, sales manager; C. G. Lisch, assistant sales manager; V. A. Fox, chief engineer; T. P. McVicker, Chicago manager.

Ziv Steel and Wire, Chicago. Booth 17-B.

Service Demand Show Some Gain In Cleveland; More Overhauling

(Continued From Page 1)

well and was by no means disappointing during the summer months. During the past few weeks, however, revenue from the servicing of cars has continued on a rather stable basis, officials of the company declare, failing to show any material increase.

Ford car service activity has also continued on an even keel, according to G. B. Ehrman, head of the G. B. Ehrman Company. Summer business was moderately good.

"Our August service business measured in labor sales to customers was away ahead of that for the preceding month, probably as much as 20 per cent.," says George W. Ott, service manager of Cadillac Authorized Service. "We expect September business to hold to the level of that for August, at least."

Other service managers see an improvement in business under way. September normally is one of the best months in the year for the service crews. Many automobile owners are back from summer vacations in September, they point out, especially during the latter half of the month, and with the approach of winter, and want their cars put into condition for the more trying requirements of cold weather driving.

Tulsa Dealers Report Increases Up to 25% Over Last Month

Tulsa, Okla., Sept. 23 (UTPS).—There is only one difference of opinion among service managers of Tulsa automobile companies on the trend of the automobile repair business, and that is with regard to the amount of increase it has shown as compared with recent months. With one accord, they agree that business is better.

Estimates of percentage increase in the volume of repair work being done now compared with a month ago range from 1 to 25 per cent. What is more, service managers believe their business will continue good.

Coming at the time it does the condition is doubly welcome. The service business failed to click properly during the spring and summer months this year, seasons of normally heavy business in that line because there are seasons when the highway is king. Just why, Tulsa managers are unable to explain. They think probably it was a natural result of the general business situation and the automobile owners effort to cut expense at every turn.

But now it is a different story. The following remarks of Tulsa service managers bear witness to the improved conditions:

"Our repair department has been busier in September than at any time in the last three months," declared A. J. Robertson of the Reeser Motor Company, state Auburn distributors. "The vacation season is over and people are returning home with automobiles somewhat the worse for wear. They are being placed in the shops in large numbers to be gone over.

"We have shown a 20 per cent. gain in the last thirty days."

Robertson's report differed, however, from the reports of other service managers with regard to the condition of business now compared with a year ago. He said it was 90 per cent. off, declaring that where he worked two mechanics at this time last year one is employed now. Other service managers said business was as good or better than in September of 1929.

Robertson has been with the Reeser Motor Company four years, and, taking an average over that period, the shop volume is about 60 per cent. down. C. L. Dorris, of the Adams Motor Company, Ford dealers, says:

"With the exception of 1924, our repair business has been better this year than in any year of the last eight, or since I went with the company. We are plugging harder for business now, using follow-ups and runners on every job we turn out. Our service business is 25 per cent. improved over a year ago.

"Comparing the first fifteen days of September with the first fifteen days of August, there has been a 20 per cent. increase. People, it seems, are finding that times are not as bad as they at first thought. If they do not feel financially able to part with the price of a new car, they at least are putting their old one in shape for the winter. An indication of this is found in the amount of major jobs that are being done, such as repaints, motor overhauls and the sale of tires.

"We are working three complete shifts, employing forty-five mechanics and giving full twenty-four-service. We have not reduced our force. On the other hand, we have increased it."

And as for Glen Dial, Inc., Dodge distributors, there is the word of three representatives, every one conversant with conditions in the service department, in support of the claim that business is better.

"We have had a gradual improvement over the last six or eight weeks," said W. C. Shaw, Jr., service manager.

"The increase in the last thirty days has been about 25 per cent.," said John Holt, assistant service manager. "Much of our service is done for oil companies and they are all having their entire fleets put into shape. I know they are not doing this in order to avoid buying new cars at this time, because the cars being repaired have been driven an average of only 15,000 or 18,000 miles. My guess is that a major development program is ahead in the oil business."

"Although down some compared with last spring and summer, our service department has been doing a considerably larger volume in the last thirty days," said W. E. Richardson, credit manager.

The service business of the Dahl Motor Company, Oakland and Pontiac dealer, is about on a level with a year ago, but in the meantime it has gone down and back up, declared E. M. Bridges, assistant manager of the service department. It is still climbing.

Bridges has knowledge of one oil company which recently had all of its automobiles practically rebuilt instead of buying new ones, as they had planned.

Shop activity of the Forster-Davis Motor Company is showing a tendency to improve, according to M. J. McKellar, in charge of service. This company sells Buicks. The service volume in August and September has improved over June and July. In fact, there has been a sharp increase of approximately 10 per cent. in the last few days. The increase has not come at the expense of new automobile sales, for the company's record in that department also is showing rapid strides.

About 500 automobile mechanics are employed in Tulsa. Their scale of pay ranges from $25 to $50 weekly. Companies are divided as to the basis of mechanics' salaries, some using the percentage or commission method, and others the hourly and weekly scale.

Portland, Ore., Dealers Report Demand 5% Below Year Ago

PORTLAND, ORE., Sept. 23.—The service end of the automobile dealer business is about 5 per cent. lower now than it was during the corresponding period of last year, according to a summary of reports gained by direct interview.

Various reasons are given for the failure to keep business up to standard this past summer. The main reason given is general business depression. Also price cutting on repair work on the part of independent repair shops, which people have patronized during a time when money is being made to go around as far as possible.

The service part of the business was not as good as it was expected to be during the active driving months of spring and winter, according to W. M. Anderson, assistant service manager of the Oldsmobile company of Oregon. Mr. Anderson stated that business has been off about 5 per cent., that the future does not look too good at the present time, and that business is not running as heavy right now as it did during the same period in 1929.

A similar report was made by the Portland Motor Car Company, Hudson-Essex distributor. Shop business is running about 5 per cent. less than last year, according to Mr. Buckley, shop superintendent. However, he stated, that business is fairly good at present, about the same as last year. Unfavorable general conditions make it imperative, though, to cut down all unnecessary expense and lower overhead as much as possible without hurting the service.

J. C. Sherwood of the Paxton Motor Company, Durant distributors, stated that spring and summer had not been so good, but that business showed indications of picking up in the service field, and he thought it would be better this fall.

Service business showed a decrease of between 9 and 10 per cent. this past summer over 1929, according to J. F. Shattuck, service manager of the Chase-Garfield Company, Chrysler-Plymouth distributors. The same comparison was made between September business and that of September, 1929. Mr. Shattuck thought, however, that as general business improves, and this gradually, the service department would be having more work.

The Goodsell Motor Company, Ford dealers, reported an actual increase of about 5 per cent. for this past summer over the previous year, but stated this did not indicate true business conditions. For, as F. H. Irwin, general manager of the company, pointed out, the firm moved into newer quarters with far better facilities for taking care of service work and, with added efforts made this year, a much larger increase of the year would have resulted if the trend of general business had been normal.

Service Demand Holds Up Well In Denver; Pick Up This Month

Denver, Col., Sept. 23. — General consensus of representative automobile dealers of Denver is that the service end of the business is holding up comparatively well. In most cases, the volume is about the same as that of last summer, with a noticeably good pickup having been observed since the first of September.

Ray V. Cosner, service manager for Fishel-Walker Buick, Inc., declares that service business has shown a definite decrease during the summer months, although fall is expected to be somewhat better.

Mr. Cosner believes that car owners are holding off and postponing work as long as possible. However, he brings out the point that comparisons with last year are not altogether fair, because of the fact that last winter's service business was the best in the history of the company, and a drop is naturally expected.

Service business at the Hudson-Essex distributors, Tom Botterill, Inc., is holding a fairly steady pace, in the opinion of F. J. Robertson, the service manager.

Mr. Robertson also makes the statement that the car owners are holding off as much as possible, and limiting their repair work to the barest iecessities. Business during the heavy driving months of the summer showed very satisfactory results with this firm, and as a whole compare very favorably with last summer's business.

Mr. Robertson is optimistic concerning the prospects for fall and winter business, although he believed that the outlook is much too uncertain to venture any strong opinions. With the number of cars on the road which have been purchased through this firm, he believes that the company will get its share of the business, even though it may require more effort than heretofore.

Allison Motors, Inc., Dodge and Plymouth distributors are better off in the service department than last year, according to the service manager, C. M. Langley, who points out that while the tourist business suffered a drop during the summer, business has been keeping up in spite of this.

This company did an excellent business during the first six months of the year, followed by a letdown in the summer, and is now starting to show a very good increase, with the start of the fall season. As a whole for the year to date, there has been an increase in the service department over 1929.

Allen Poague, service manager for the Plant-Butler Motor Company, Graham dealers, declares that service business with his firm has been holding up more steadily all year than in 1929, and compares very well with that of last year. The service end of the business has been showing up in good shape all through the summer, with a definite upturn noticed since the first of the month.

Al O'Meara of the O'Meara-Young Motor Company, Ford dealers, says that his firm will show no decrease in service business over that of last year, inasmuch as this department has been holding up steadily all year, and may show an increase for the year.

Mr. O'Meara says that business is moving along at about the same pace as last year, with no great changes being apparent so far. He is confident that the fall will see a general pick-up, with a better spirit prevailing in all lines.

FORD AND CHEVROLET SHARE OF CAR SALES IS LESS IN AUGUST

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real importance as an indication that the upturn in business has actually started.

Both Ford and Chevrolet, however, continue to obtain a larger share of the total business than was the case in 1929. Ford accounted for 37.5 per cent. of the total sales in the twenty-four states and the District of Columbia in August, 1929, as compared with the 37.9 per cent. this year, while Chevrolet last year was able to account for only 19.7 per cent. of the total, as against its 23.5 per cent. this year. It is notable that Chevrolet has increased its percentage of the total by a larger margin than Ford.

The states from which registration returns for August have been received are Arkansas, Connecticut, Delaware, Florida, Idaho, Illinois, Maryland, Minnesota, Missouri, Montana, Nebraska, New Hampshire, North Carolina, North Dakota, Ohio, Oregon, Rhode Island, South Carolina, South Dakota, Utah, Virginia, Washington, West Virginia, Wisconsin and the District of Columbia.

In the first seven months of the year Ford's percentage of the business in the foregoing states was slightly more than 40 per cent., while Chevrolet was able to account for 22.9 per cent. of the sales in these states.. Complete sales totals for August will be awaited with interest, as they will reveal the cars which have gained the registrations that have been lost by Ford and Chevrolet.

The complete new car registration statistics from the twenty - four states and the District of Columbia reveal that the decline from last year was 49 per cent. as compared with a decline of more than 50 per cent. shown in the first fifteen states to report. The decline from the preceding month in those states was around 24 per cent., as compared with a drop of about 40 per cent. in the first fifteen states to report for the month.

JOSEPH BIJUR UNDERGOING MINOR OEPERATION IN N. Y.

New York, Sept. 23.—Joseph Bijur, president of the Bijur Lubricating Corporation, 250 West 54th St., is undergoing a minor operation here this week. Mr. Bijur is expected to return to the office within a short time.

SALES OF MEDIUM PRICED CARS GAIN

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lower than a year ago this time. Our used car stock, as always, is low. We have a habit of keeping it so."

Walter J. Lightfoot, Dodge dealer: "Our September sales of new models were just about the same as they have been all year. Both our new car and our used car stocks are low, especially the latter."

Chervin Motors, Oakland and Pontiac dealers: "Our new car sales began to show some improvement about the first of August and sales were well sustained until September 1. Since that time they have been at about the lowest ebb of the year. Our new car stock is in good shape, however, and our used cars are fairly few in number."

G. M. TO WITHDRAW FROM PARIS SALON; CHARGE PREJUDICE

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only after the manufacturers of every other nation have chosen theirs. The only space left always is poorly lighted and in recesses or inconspicuous places along walls. In addition, the show officials have seized many petty occasions to assess fines against American exhibitors.

"It is only proper that each country will and should permit its own manufacturers to draw for space first. No objection ever has been raised to this practice," said Mr. Mooney.

"Individual American manufacturers and the National Automobile Chamber of Commerce frequently have made requests for changes in the French rules to place the United States on a parity with other countries, without result.

"Under the circumstances, the General Motors Export Company regretfully feels it can no longer condone such discrimination, or with self-respect lend its financial and moral support."

The withdrawal of General Motors cuts six passenger car lines, two truck and two bus lines out of the attractions the Paris show hitherto has been able to offer to the public.

CORROSION AND HEAT RESISTING ALLOY

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high nickel alloys. By special heat treatments or manipulation of its composition, it may be made magnetic or nonmagnetic, without changing its basic property of resistance to corrosion.

Welding

This material is unusually well suited for welding by arc or acetylene and by the use of filler rod of the same composition. The weld produced is soft and machinable with no hard ridges. It is adaptable as filler rod for welding of plain iron as well.

Applications

This nickel-copper-chromium cast iron has been applied in general wherever a corrosion or heat resistance superior to that of plain cast iron was required. Its corrosion resistance in general is very much better than that of plain cast iron and it will frequently equal that of the bronzes. However, its corrosion product is a rust deposit which forms very slowly and evenly over the surface. For this reason, it can not be used where freedom from rusting is essential. Its heat resistance is far superior to that of plain cast iron but it should not be expected to equal that of the high nickel-chromium types of alloys.

DODGE UNITES CINN. AND INDIANAPOLIS BRANCHES

Indianapolis, Ind., Sept. 23.—The district office of Dodge Brothers Corporation here has been consolidated with the Cincinnat, O., branch involving transfer of personnel and records, after a year and a half of remarkable progress in improving the position of Dodge products in the Indiana district.